HS2P
(Machine Code: G407/G408/G410/G411)
Service Manual

Issued on 22nd December 1998
Ricoh Co., Ltd

⚠IMPORTANT SAFETY NOTICES

1. Before disassembling or assembling parts of the scanner and peripherals, make sure that the scanner power cord is unplugged.
2. The wall outlet should be near the scanner and easily accessible.
3. The output voltage of the PSU (Power Supply Unit) can be either 100 ~ 120 Vac or 220 ~ 240 Vac, without any adjustment. Make sure that the above voltage is used.
4. The power cord should be an approved type, in accordance with the regulations for the country in which the scanner is used.
5. The use of cables other than the shield I/O cables or equivalent specified will invalidate the certification of this scanner and may cause interference levels which exceed the limits established for this equipment.

Maintenance Information
The user's manual explains how to use and maintain the scanner. Before performing the maintenance, read the user's manual.

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Notice
The contents of this manual are subject to change without notice.

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1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

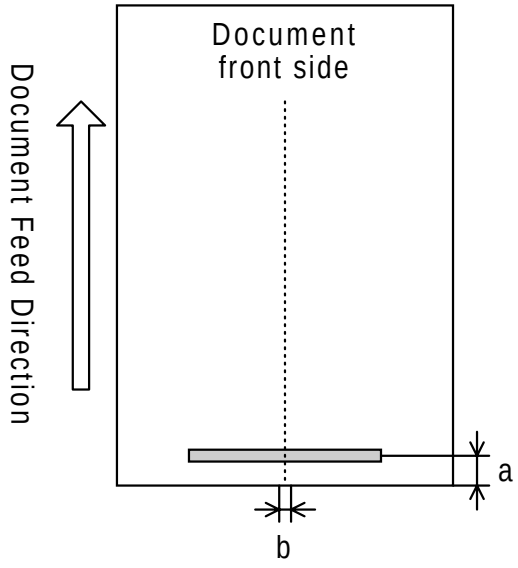
1.1.1 MAIN BODY

Scanning method:	Flat-bed with ADF
Book scan:	Horizontal: Max. 298 mm [11.7"] Vertical: Max. 432 mm [17.0"]
ADF:	Document size: Width: 69 ~ 298 mm [2.7" ~ 11.7"] Length: 120 ~ 2,000 mm [4.7" ~ 78.5"] All pages in a document must be the same width Document weight: 41 ~ 128 g/m^2 [11 ~ 34 lb.] ADF capacity: 150 sheets (64 g/m^2 [20 lb.]) 110 sheets (105 g/m^2 [24 lb.]/A4, A5, LT, HLT) 80 sheets (105 g/m^2 [24 lb.]/A3, DLT) Stack height must be less than 15 mm [0.6"]
Scanning resolution:	Simplex mode: Main scan: 100 ~ 800 dpi (in 1 dpi steps) Sub scan: 100 ~ 800 dpi (in 1 dpi steps) Duplex mode: Main scan: 100 ~ 600 dpi (in 100 dpi steps) Sub scan: 100 ~ 600 dpi (in 100 dpi steps)
Grayscales:	8 bits/pixel
Initialization time:	About 15 seconds
Scanning speed:	0.65 s/200 dpi (A4, binary picture mode)
Scanning throughput:	Simplex mode: 55 ppm/200 dpi (A4, binary picture mode) Duplex mode: 86 ipm/200 dpi (A4, binary picture mode) (Counted from the second page)
Interface:	SCSI-2
Power:	1) 102 to 138 V ac (45 to 65 Hz) 2) 187 to 276 V ac (45 to 65 Hz)
Power consumption (without all possible options):	Simplex model Standby: 50 W Max. Scanning: 90 W Max. Low power mode: 12 W Max. Duplex model Standby: 80 W Max. Scanning: 120 W Max. Low power mode: 12 W Max.

Operating environment:	Temperature: 10 to 32°C [50 to 90°F] Humidity: 20 to 80% RH
Weight:	Simplex Model: Less than 25 kg [55.1 lb.] Duplex Model: Less than 26 kg [57.3 lb.] (Add 1 kg [2.2 lb.] when the Endorser is installed.)
Dimensions (W x D x H):	470 x 677 x 278 mm [18.5" x 26.7" x 10.9"]

1.1.2 ENDORSER

Number of printable characters:	19 characters (max)
Character set:	43 characters 0123456789#./-:,'AB ····Z
Character size:	1.6 (W) x 2.8 (H) mm
Character pitch:	2.4 mm ± 20%
Printable lines:	1 line (main scan direction)
Inking:	Ink roll type
Ink refill:	Ink roll exchange
Ink color:	Purple
Print position:	a: 7 ± 4 mm b: 0 ± 5 mm



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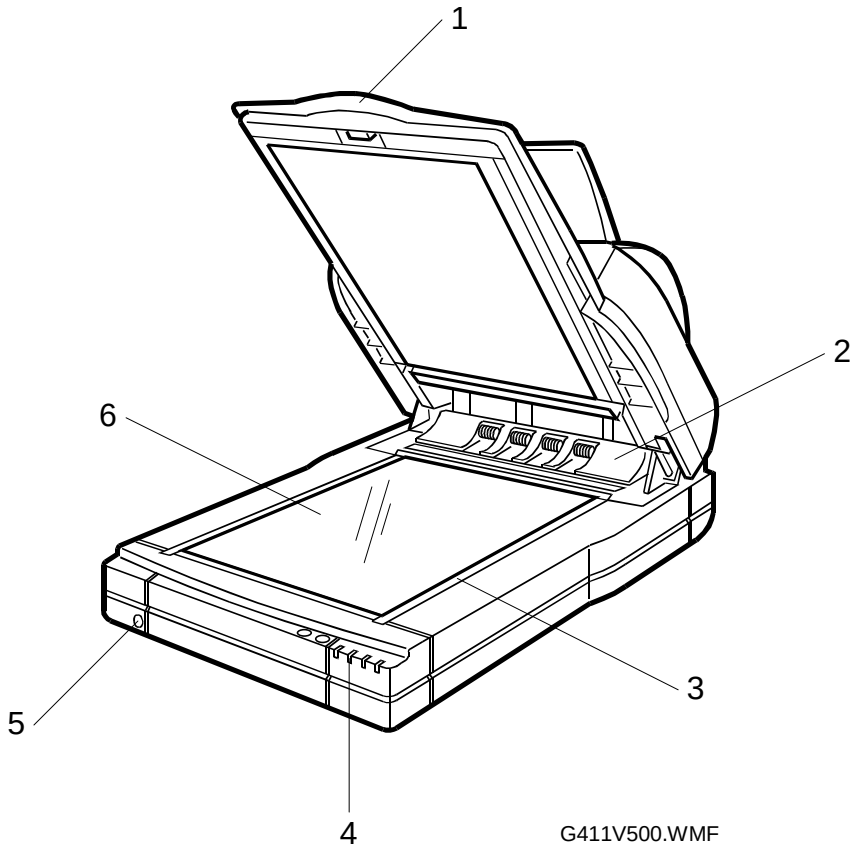
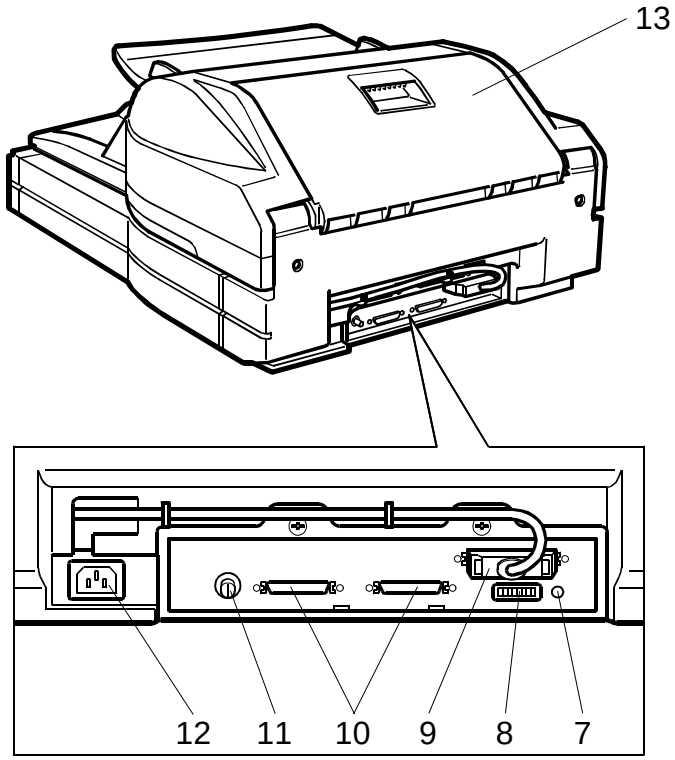
1.2 COMPONENT LAYOUT

1.2.1 FRONT VIEW



No.	Name	Function
1	Platen cover	Covers the document and serves as a neutral background for documents placed on the main exposure glass.
2	ADF exposure cover	Covers the scanner and closes the ADF exposure cover interlock switch. Also contains an exposure glass.
3	Scale	Used for positioning a document when placing it on the exposure glass.
4	Scanner indicator lamps	The green and red lights indicate the condition of the scanner.
5	Power switch	Turns the power on and off.
6	Main exposure glass	A document to be scanned in book mode is placed face down on this glass.

1.2.2 REAR VIEW



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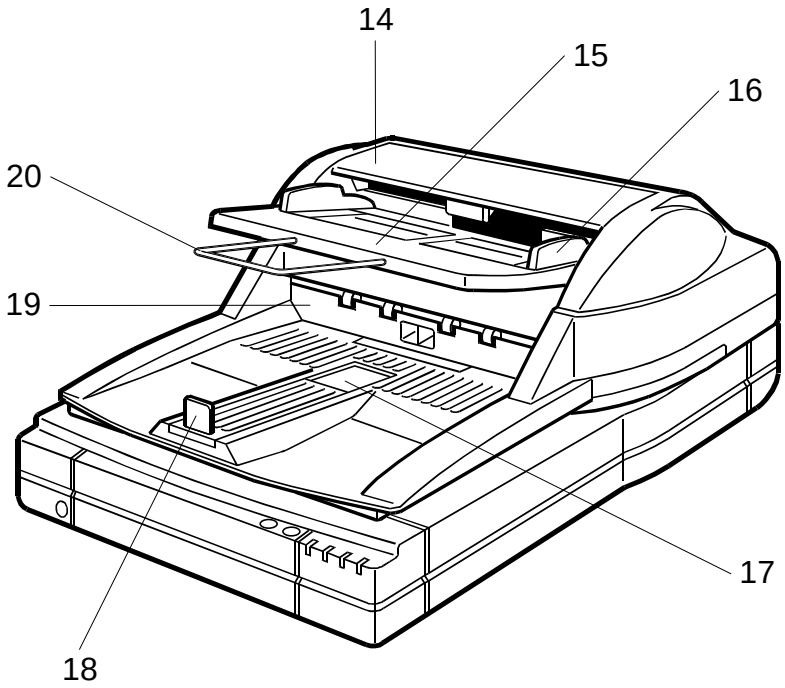
No.	Name	Function
7	Reset switch	If this is pressed, the machine is reset.
8	DIP switches	Used to select various scanning modes and test modes.
9	Interface for reverse side scanning (Duplex model only)	Interface for the video signal during reverse side scanning.
10	SCSI connectors	For connecting the SCSI cables.
11	SCSI ID rotary switch	Used to select the SCSI ID and to select diagnostic tests. Note that positions 8 and 9 are interpreted as SCSI ID 7.
12	Power plug inlet	For connecting the power cord.
13	ADF cover	Open this cover to clear paper jammed at the input side.

1.2.3 ADF



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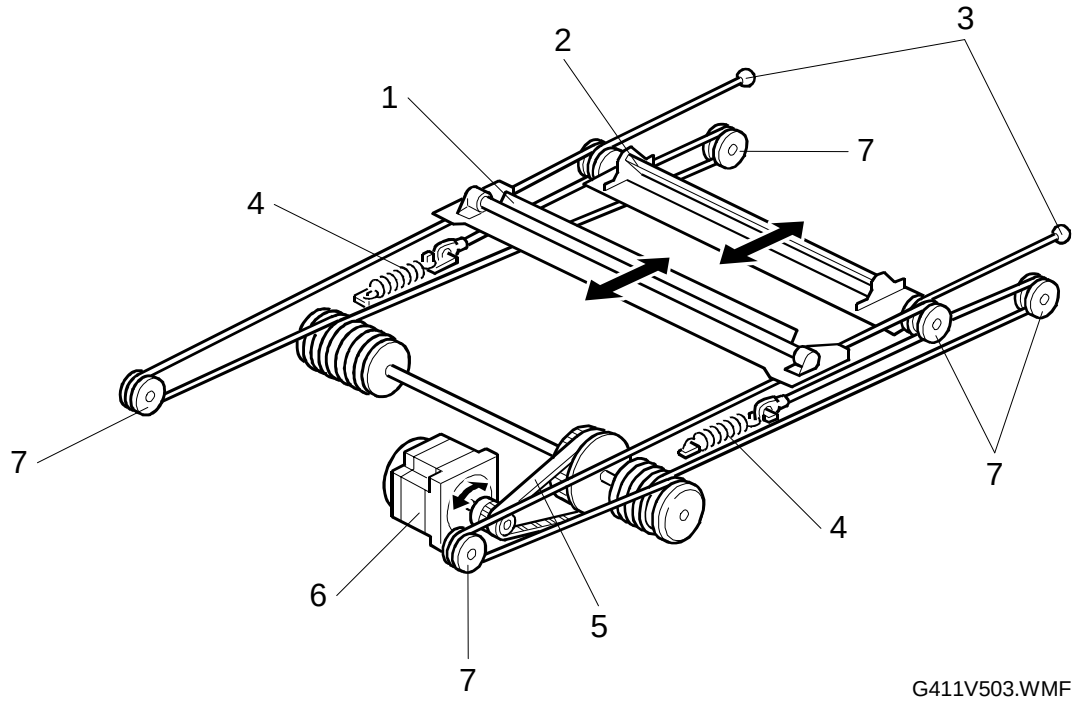
No.	Name	Function
14	ADF	Automatically feeds multi-page documents into the scanner.
15	Document table	Documents to be scanned using the ADF are placed here.
16	Document guides	Used to properly align the documents placed in the input tray.
17	Exit table	Receives documents fed by the ADF after scanning.
18	Exit table extension	This holds the documents output from the ADF; it can be extended to support long documents.
19	Endorser cover	Open this cover to clean the endorser or replace the ink.
20	Document support wire	If long documents are placed in the input tray, this helps to feed them correctly.

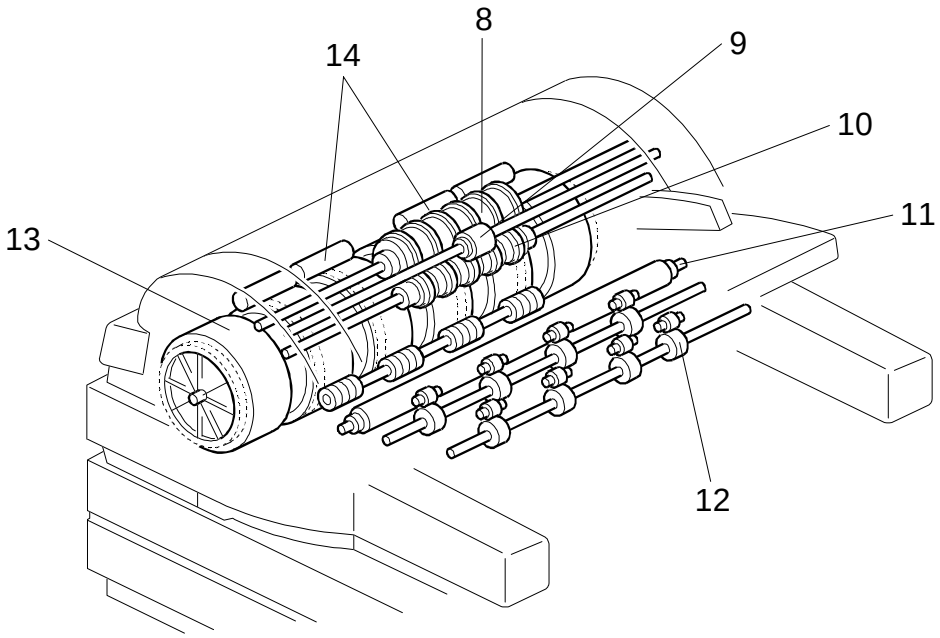
1.3 DRIVE LAYOUT

1.3.1 SCANNER



No.	Name	Function
1	First scanner	Moves the exposure lamp along the document and sends the light reflected from the document to the 2nd scanner by means of a mirror.
2	Second scanner	Moves to keep the distance between the exposure lamp and the CCD constant, and sends light reflected from the 1st scanner to the CCD.
3	Scanner drive wires	Transmit motor power to the 1st and 2nd scanners.
4	Wire springs	Tighten the scanner drive wires.
5	Motor belt	Transmits motor power to the scanner drive wires.
6	Scanner motor	Drives the scanners.
7	Pulleys	Hold the scanner drive wires.

1.3.2 ADF



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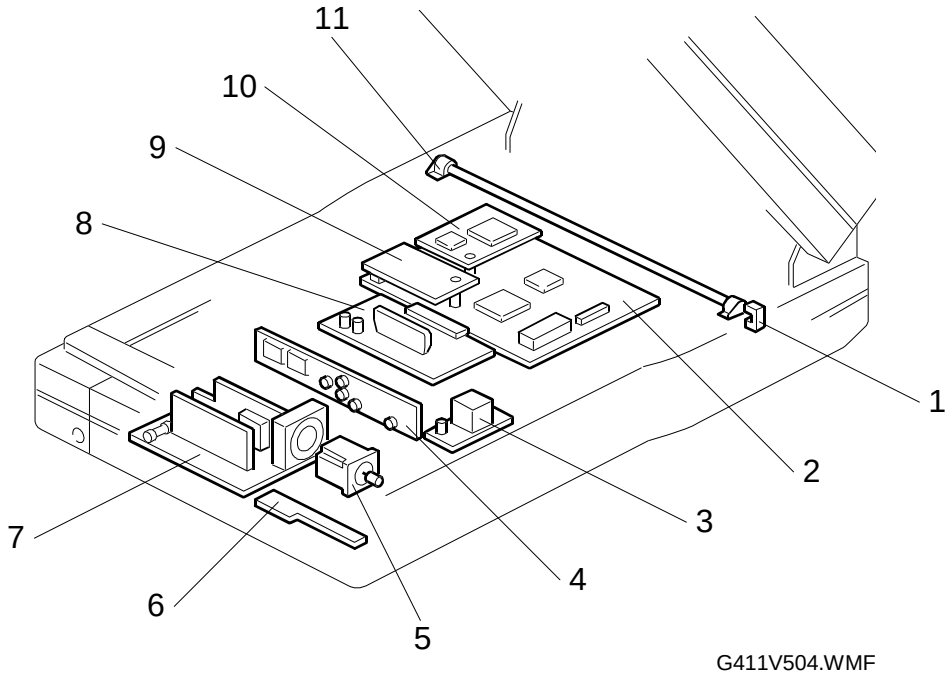
No.	Name	Function
8	Feed roller	Feeds the top page of the original into the ADF.
9	Pick-up roller	Picks up and transports the top page of the original on the document table.
10	Separation roller	Stops the lower pages of the original while allowing the top one to pass.
11	White roller (Duplex model only)	Allows the machine to correct for variations in the white level of the CIS.
12	Feed-out rollers	Feed the scanned original onto the exit table.
13	Paper transport drum	Transports the original to the scanning position.
14	Paper transport rollers	Hold the original against the paper transport drum.

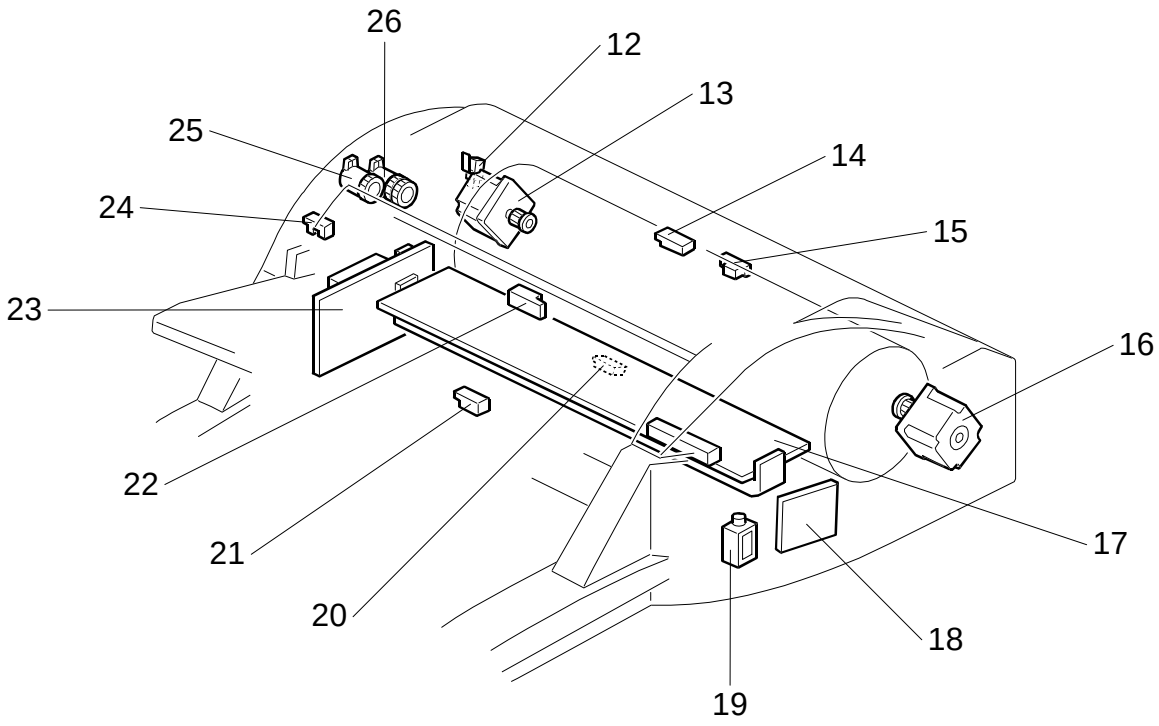
1.4 ELECTRICAL COMPONENT LAYOUT

1.4.1 SCANNER



No.	Name	Function
1	Home position sensor	Detects whether the first scanner is at the home position.
2	SCU	Controls the overall scanner function.
3	Lamp Stabilizer	Provides ac power to the exposure lamp.
4	SBU	Contains the CCD, and outputs a video signal to the SCU.
5	Scanner Motor	Drives the scanners.
6	SOP	This contains the scanner indicator lamps.
7	PSU	Provides dc voltages to the system.
8	IOB	Controls the mechanical parts of the scanner.
9	IPU Board (Option)	Performs automatic text/image separation, dynamic threshold, section area, and document size detection.
10	RCU (Duplex Model only)	Outputs a video signal of the reverse side of the original to the SCU.
11	Exposure lamp	Illuminates the original for exposure.

1.4.2 ADF



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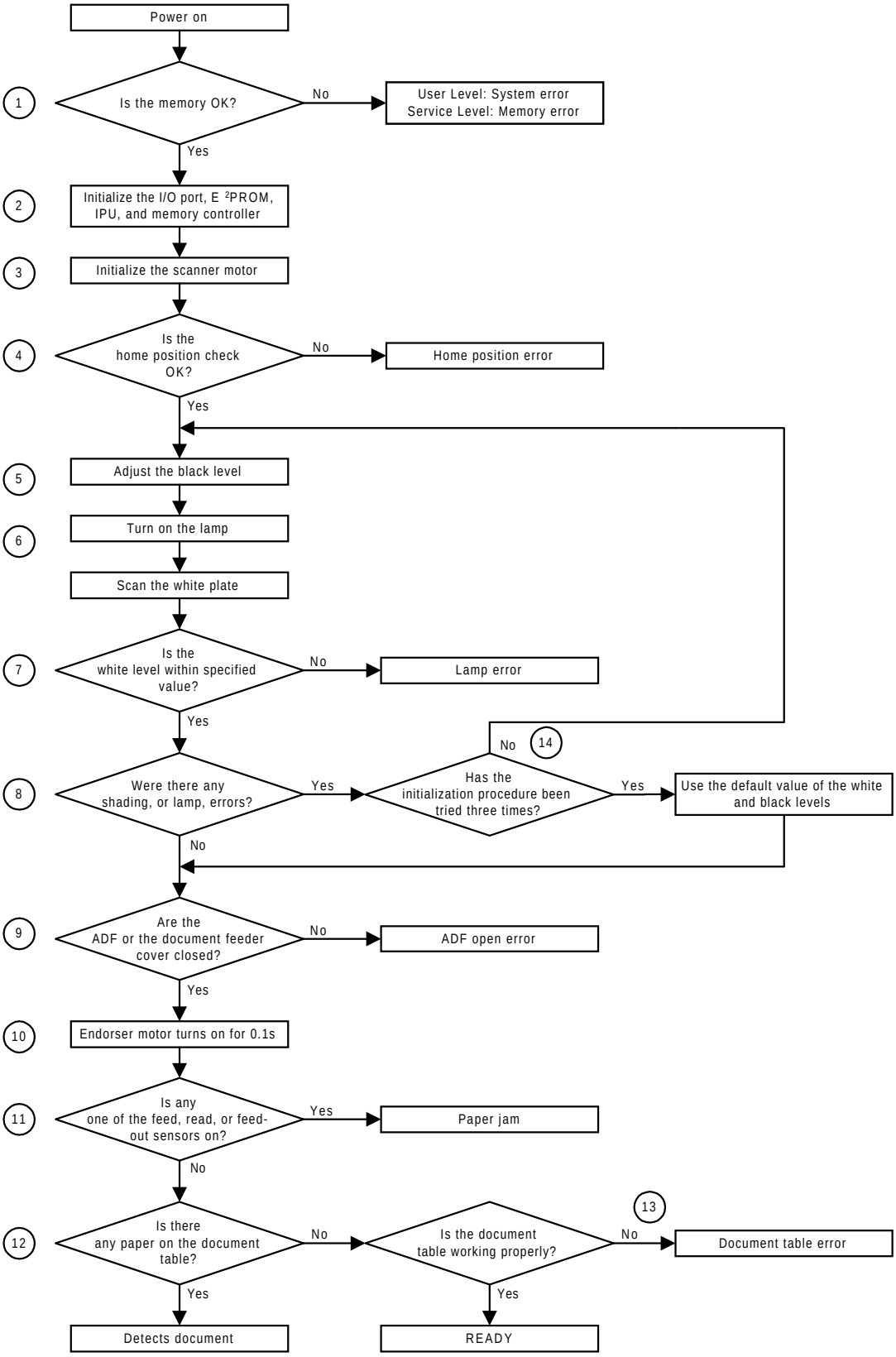
No.	Name	Function
12	ADF interlock switch	Detects whether the ADF cover and platen cover are open or closed; cuts the power supply to the machine.
13	Paper transport motor	Drives the paper transport drum.
14	Feed sensor	Detects when a document is just before the feeding position.
15	Read sensor	Synchronizes the original exposure timing.
16	Paper feed motor	This drives the pick-up and feed rollers.
17	CIS (Duplex model only)	Contains the CCDs and LEDs that scan the reverse side of the original.
18	EDU (Option)	Controls the mechanical parts of the endorser.
19	Endorser solenoid (Option)	Moves the paper holding plate to hold the original at the endorser's printing position.
20	Relay sensor	Checks for original misfeeds.
21	Feed-out sensor	Detects when a document is at the feed-out position.
22	Document sensor	Detects when a document is placed on the document table.
23	ADU	Controls the mechanical parts of the ADF.
24	Document table position sensor	Detects if the document table is at the feed position or not.
25	Pick-up clutch	Controls pick-up roller rotation.
26	Document table lift clutch	Switches on to lift the document table up or down.

2. DETAILED SECTION DESCRIPTIONS

2.1 INITIALIZATION



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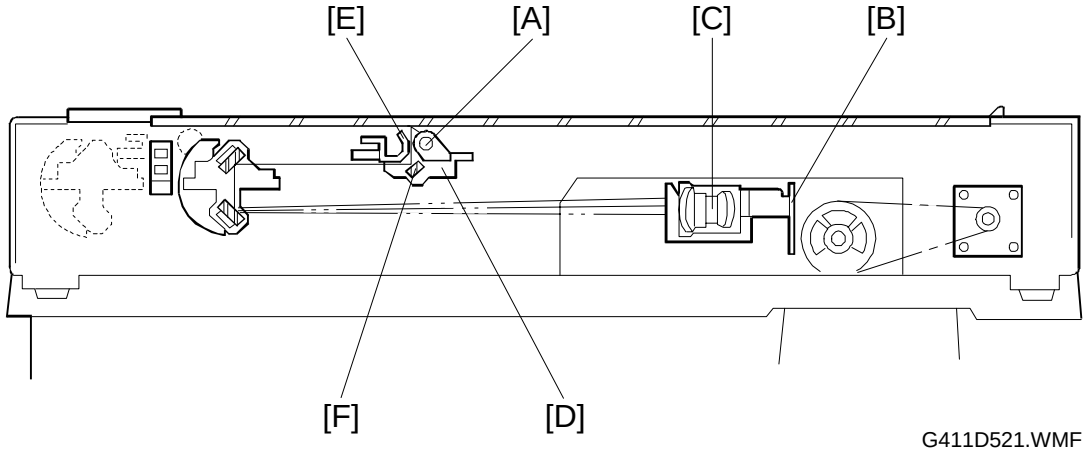
During power-up initialization, the scanner performs the following steps (refer to the flow chart on the previous page).

1. Tests the ROM checksum and makes a RAM read/write test. If the CPU cannot test these, the CPU determines that a memory error has occurred.
2. Initializes the I/O port, E^2PROM, and gate arrays (IPU and memory controller).
3. Initializes the scanner motor driver.
4. Checks the home position sensor signal timing while moving the scanners. If the CPU does not detect a signal change within the specified period, it determines that a home position error has occurred.
5. Adjusts the difference between the even and odd black levels and total black level.
6. Turns the exposure lamp on.
7. Adjusts the white level, and checks the peak level of the auto gain control. If the CPU cannot adjust them to the specified levels, the CPU determines that a lamp error has occurred.
8. If the black level or the white level cannot be adjusted properly during the above initialization process, the scanner retries the initialization up to three times. If the CPU detects an abnormal condition at the third time (step 14), the CPU stores the default values of the black and white levels into the NVRAM on the SCU.
9. Checks the ADF interlock switch signal. If the CPU detects that the switch is open, it determines that an ADF open error has occurred.
10. When the endorser unit has been installed, the endorser motor turns on for 0.1 second.
11. Checks the signals from the feed, read, and feed-out sensors. If any of them are on, the CPU determines that there is a paper jam.
12. Checks the document sensor signal. If the CPU detects a document on the document table, check #13 is not made until the document is removed.
13. Checks the document table position sensor signal timing while lifting and lowering the document table.
14. See step 8.

2.2 SCANNER MECHANISMS

2.2.1 BOOK MODE

Overview



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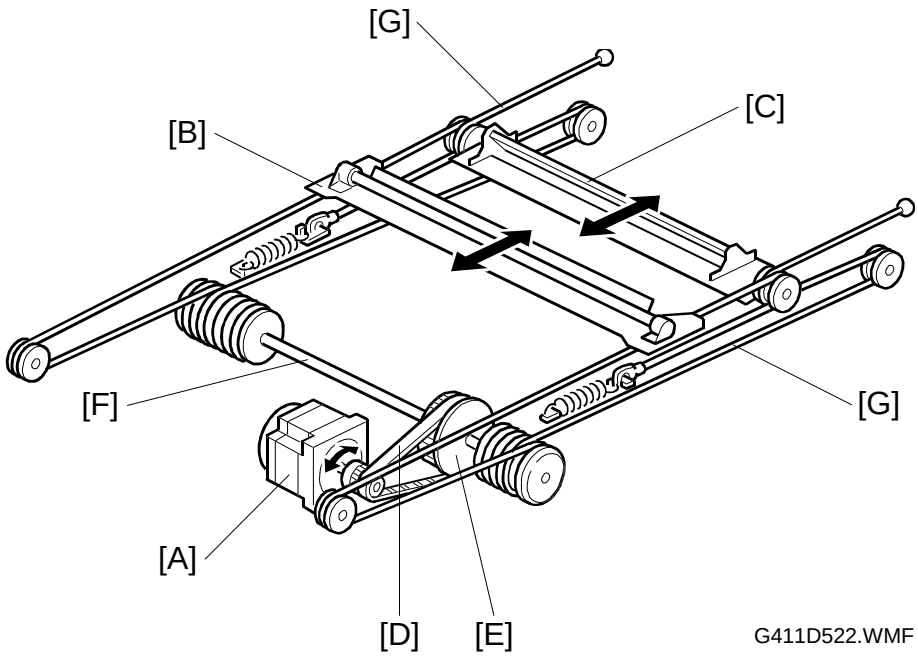
The exposure lamp (a xenon lamp in this model) [A] illuminates the original. The image is reflected onto a CCD (charge coupled device) [B] via the 1st, 2nd, and 3rd mirrors, and through the lens [C].

The 1st scanner [D] consists of the exposure lamp, a reflector [E], and the 1st mirror [F].

The exposure lamp is energized by an ac supply to avoid uneven light intensity while the 1st scanner moves in the sub scan direction (down the page). The entire exposure lamp surface is frosted to ensure even exposure in the main scan direction (across the page).

The light reflected by the reflector is of almost equal intensity in all directions, to reduce shadows on pasted originals.

Scanner Drive

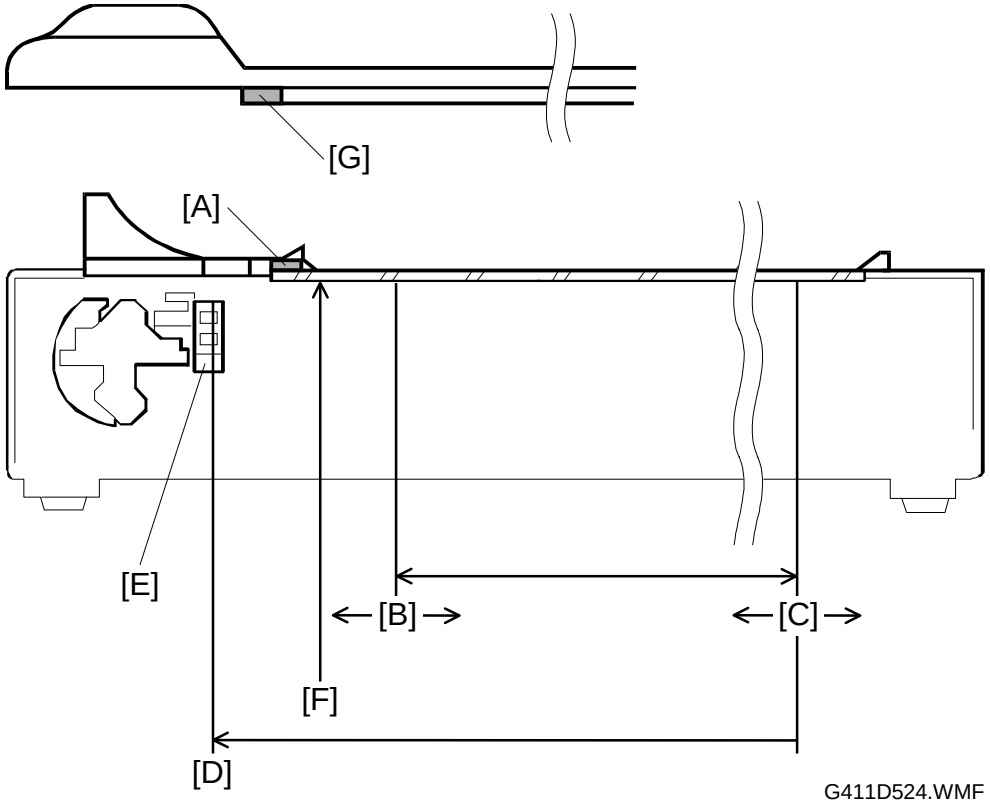


The scanner drive motor [A] (a stepper motor) drives the 1st and 2nd scanners [B, C] through the timing belt [D], scanner drive pulley [E], scanner drive shaft [F], and two scanner wires [G].

The IOB board drives the scanner drive motor. The scanning speed depends on the scanning resolution. The returning speed depends on the distance from the home position sensor.

Basic Scanning Procedure

When the scan command is received from the host computer, the scanner starts scanning as explained in the following steps.



Initialization

The scanner checks the home position, scanner cover, and memory. If an error is detected, the scanner motor will stop.

The scanner scans the white plate [A] on the underside of the ADF exposure cover to perform the shading function.

Image Scanning

The scanner starts to scan the image area at the designated position [B]. The scanner stops after scanning the designated image area [C]. The arrows indicate that the scan start position and image area depend on the settings input by the user.

Scanner Reversing

After the image has been scanned, the scanners return to the home position [D].

The scanners are stopped when the first scanner activates the home position sensor [E]. If the scanner home position sensor is not activated within a certain time, a home position sensor error will occur.

Optional Steps (Optional IPU Board)

Size Detection

If selected, this is done after the ‘Initialization’ step.

1) Main Scan Direction (Document Width)
The first scanner moves to the book mode standard position ([F] on the previous page). Then, the scanner scans 5 mm from the book mode standard position.

The scanner determines the document width in the main scan direction from the output signal level. The edge of the document is detected by the difference between the level of the document data and the background signal which is provided by the silver plate [G] attached to the platen cover across the main scan.

If there is a gap at the leading edge, such as a tear (or a black stripe), extending more than 1 mm across the paper and more than 5 mm down the paper, the machine cannot detect the document width past this gap. In this case, an error message may appear, and scanning is impossible. . Disable this feature to allow the machine to scan this document.

2) Sub Scan Direction (Document Length)

The scanner detects the document size only in the main scan direction, and the scanner driver determines that the document length is the same as for a standard paper size of the same width.

NOTE: The scanner always assumes the paper is in a lengthwise orientation (i.e., the main scan is the short side). Also, in USA models, if Letter width is detected, the paper is always assumed to be Letter size (this means that the last few inches of a Legal-size original will not be scanned).

Read Size Command

If selected, this is done after the ‘Initialization’ step.

1) Read Size Command
If the scanner receives the Read Size command in book mode, it detects the size in the main scan direction as described above.

The scanner sends the width data to the host computer.

After detecting the document size, the scanner scans the detected area.

Abort Command

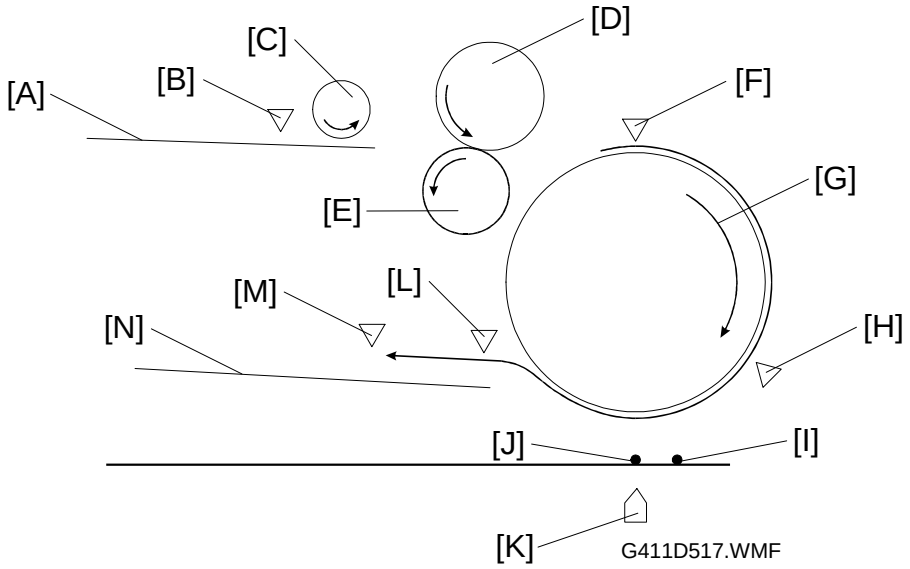
This can occur at any time during the basic scanning procedure.

If the Abort command is received during scanning, the scanner motor is stopped. Then the scanner returns to the home position ([D] in the previous diagram).

If this command is received while the scanner is reversing or checking the home position, the operation is not interrupted.

2.2.2 ADF MODE

Overview



When the originals are placed on the document table [A], the document sensor [B] detects them. The pick-up roller [C] picks up the originals and transports them to the feed roller [D]. The separation roller [E] turns in the opposite direction to the feed roller. As a result, just one original is sent to the paper transport drum [G]. The feed sensor [F] detects whether the original has reached the transport drum or not. Then the original turns with the transport drum through the read sensor [H]. While the original passes over the ADF scanning position [J], the scanner [K] reads the original. After reading, the original goes to the exit table [N]. The feed-out sensor [M] detects whether the original is fed out or not. The relay sensor [L] detects when an original is jammed in the area between the read sensor and the feed-out sensor. This sensor is monitored at all times except when the ADF is feeding a document.

Basic Scanning Procedure

When the scanner receives the ADF scanning command, the scanner scans the original as described below.

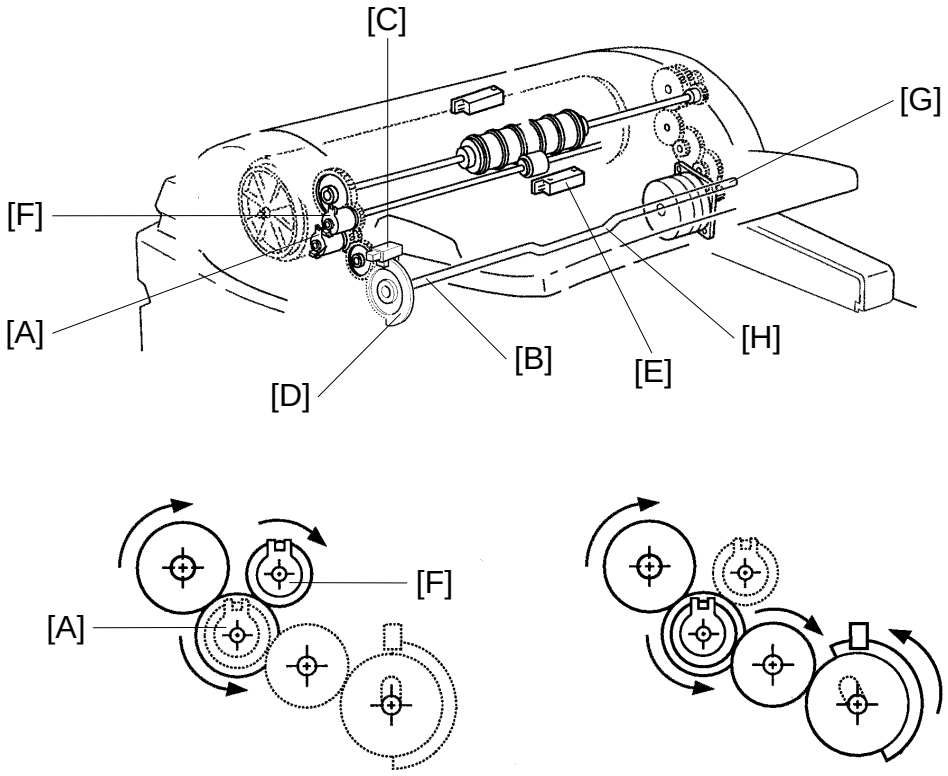
1) ADF Mode
The scanner performs the home position check and the shading process. If a home position error is detected, the scanner [K] will stop immediately. If an ADF cover open error or memory error is detected, the scanner will stop after returning to the home position.

The first carriage moves to the ADF scanning position [J] from the scanner home position [I]. Then the paper transport motor starts.

2) SADF Mode
The scanner waits until the designated time for the originals to be placed on the document table [A].

When the originals have been placed on the document table, the same procedure as for ADF mode is carried out.

Document Table Lift



G411D518.PCX

The lift mechanism consists of the document table lift clutch [A], the lift shaft [B], the document table position sensor [C], and the sensor actuator on the gear [D].

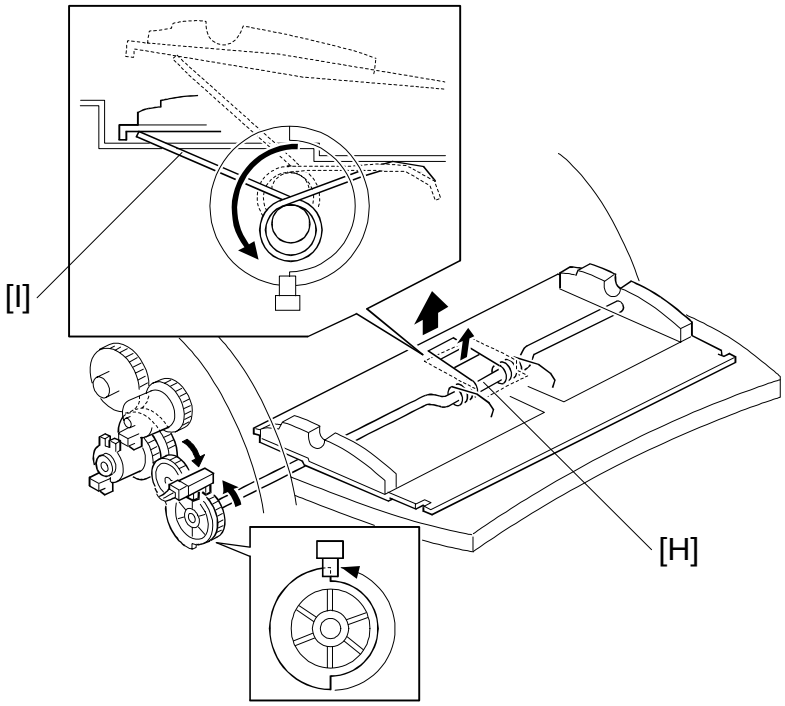
In standby mode, the bend in the lift shaft [H] is pointing downwards and the actuator is just inside the sensor.

When an original is placed on the document table, the document sensor [E] is activated. Then the paper feed motor [G] turns on. At the same time, the document table lift clutch [A] turns on to rotate the lift shaft.

At this time, the actuator starts to turn anticlockwise, and the flat part of the spring [I] that is loosely attached to the bend in the lift shaft pushes up the document table (see the next page for a diagram).

When the top of the document stack is pushed up against the pick-up roller, it can rise no more. However, the mechanism continues to push up against the tray until a half-turn of the shaft has been completed (i.e., until the actuator leaves the document table position sensor). At that time, the document table lift clutch and the paper feed motor turn off. If the actuator does not leave the sensor within a certain time, a document table error will occur.

The feed motor turns on again at a motor speed which depends on the scanning resolution, and the pick-up clutch [F] turns on to feed the top sheet of the original (see Original Feed and Separation).

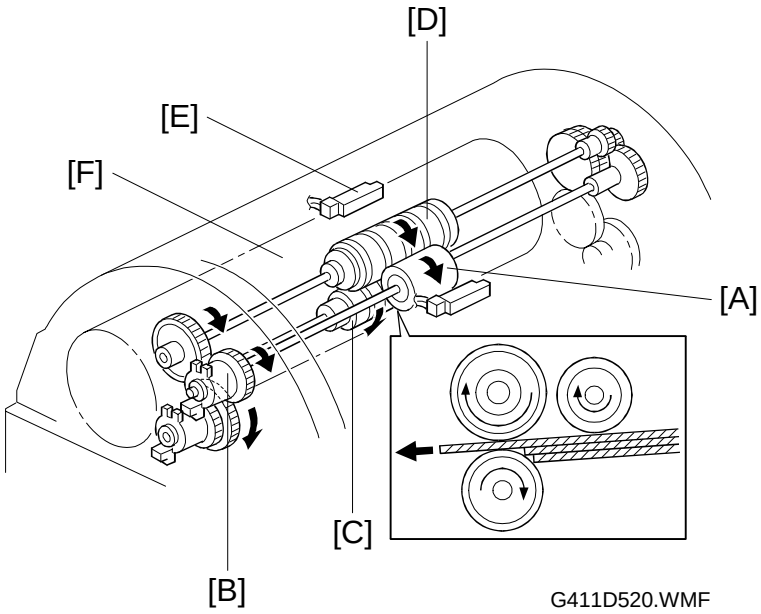


G411D519.WMF

When the first original is being fed, the bend in the lift shaft is pointing up, and the spring is at maximum compression. As sheets of the document are scanned, the spring pushes the document table upwards so that the top of the stack is always against the pick-up roller.

When all pages of the original have been fed out of the ADF, the document table lift clutch and paper feed motor are energized to lower the tray. They turn off when the document table sensor is deactivated. If the sensor is not deactivated within the designated time, a document table error will occur.

Original Feed and Separation



To feed the original, the paper feed motor and the paper transport motor (which drives the paper transport drum) turn on. The paper feed motor drives the pick-up roller [A] through a train of gears and the pick-up clutch [B]. The pick-up clutch turns on to feed the top sheet of the original. If the pick-up roller feeds multiple pages of the original, the separation roller [C] and the feed roller [D] separate these pages (the separation mechanism is friction-based).

When the leading edge of the original activates the feed sensor [E], the paper feed motor and the pick-up clutch turn off, then the paper transport drum [F] feeds the original to the scanning position.

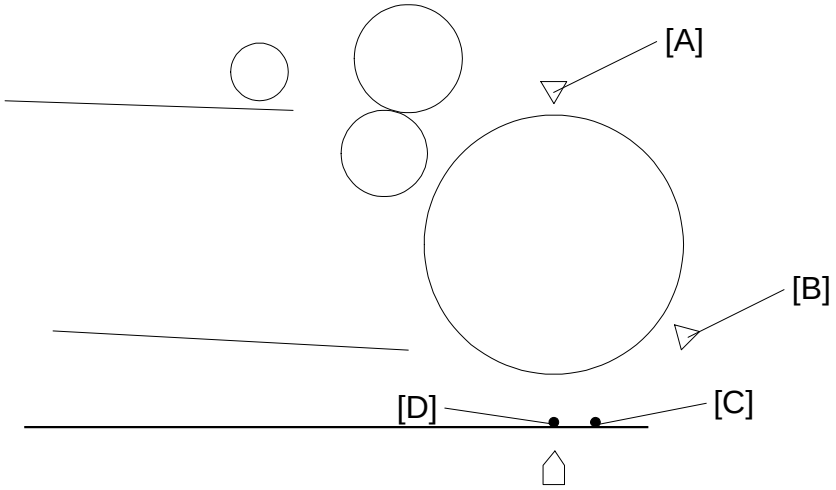
Image Scanning

The scanner starts to scan the image when the leading edge has passed the read sensor by a certain distance (measured by motor pulses).

When the CPU has fed the trailing edge of the original 30 mm past the feed-out sensor, the transport motor turns off.

Optional Steps

Size Detection



If selected, this is done after document table lift/paper feed.

1) Main Scan Direction (Document Width)
This function will be available when the optional IPU board is installed.

First of all, the original is fed to the scan ready position between the read sensor [B] and the size detection position [C]. Then the first scanner moves to the size detection position [C] from the ADF scanning position [D]. After that, the original is fed to the ADF scanning position.

As a result of the above operation, the original is fed 5 mm past the first scanner. Then the CPU detects the original width. The edge of the document is detected by the difference between the level of the document data and the background level, which is provided by the black bracket located over the ADF exposure cover.

If there is a gap at the leading edge, such as a tear (or a black stripe), extending more than 1 mm across the paper and more than 5 mm down the paper, the machine cannot detect the document width past this gap. In this case, an error message may appear, and scanning is impossible. Disable this feature to allow the machine to scan this document.

After finishing the above operation, the first scanner returns to the ADF scanning position.

2) Sub Scan Direction (Document Length)
The length of the original is calculated by counting the motor pulses while the feed sensor [A] is on. (The length is detected during scanning.)

Read Size Command

If selected, this is done after document table lift/paper feed.

If the scanner receives a Read Size command in ADF mode, it detects the document size in the main scan direction as described on the previous page.

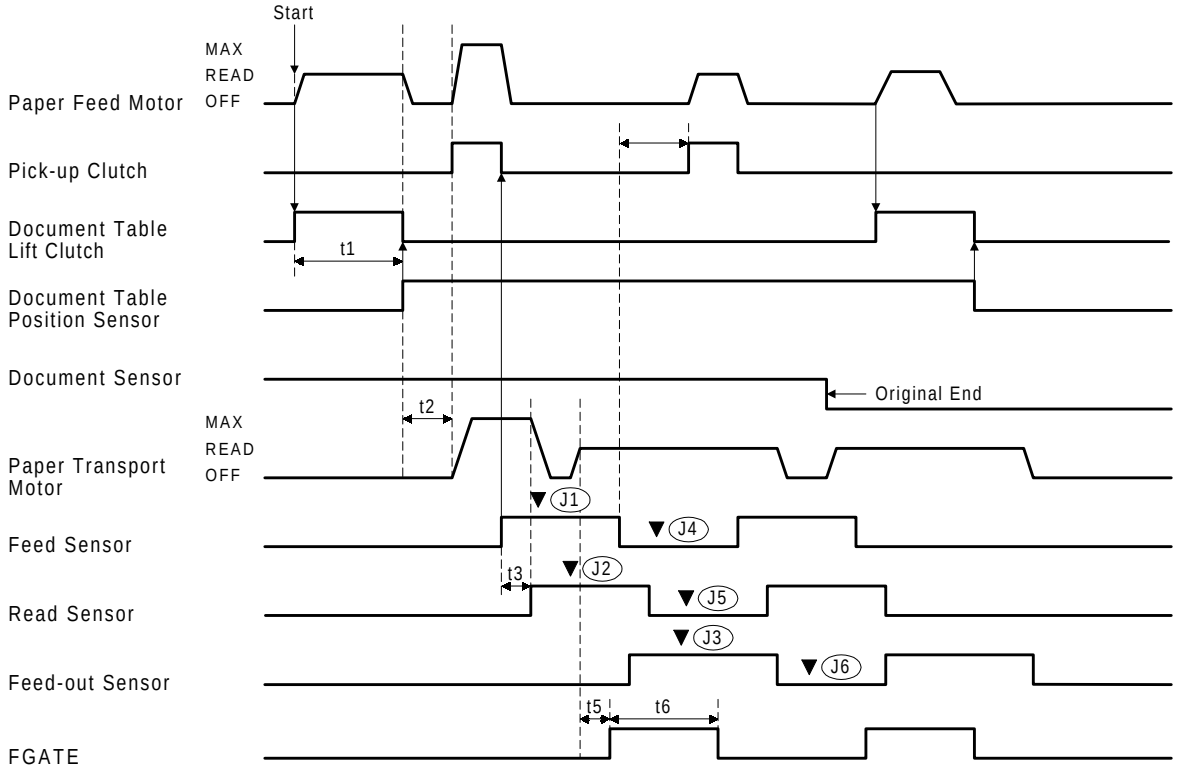
The scanner sends the width data to the host computer.

Abort and Unload Commands

These can occur at any time during the basic scanning procedure.

When the CPU receives the Abort or the Unload command during paper transport, the scanner feeds out any original that is in the ADF.

2.3 PAPER MISFEED DETECTION



G411D527.WMF

FGATE: When this signal is high, scanned data is valid

Unit: milliseconds

	t1	t2	t3	t4	t5	t6
200 dpi	Within 3,000	210	205	44	24.64	L x 0.011 x 200
400 dpi	Within 3,000	210	205	88	172.04	L x 0.011 x 400

L: Document length (mm)

J1: The leading edge of the original does not reach the feed sensor within the time required for feeding the distance between the pick-up roller and the feed sensor + 150 mm after the pick-up clutch turned on.

J2: The leading edge of the original does not reach the read sensor within the time required for feeding the distance between the feed sensor and the read sensor + 150 mm after the feed sensor was activated.

J3: The leading edge of the original does not reach the feed-out sensor within the time required for feeding the distance between the read sensor and the feed out sensor + 30 mm after the read sensor was activated.

J4: The trailing edge of the original does not pass through the feed sensor within the time required for feeding the maximum original length (2 m) + 60 mm after the feed sensor was activated.

J5: The trailing edge of the original does not pass through the read sensor within the time required for feeding the original + 75 mm after the read was activated.

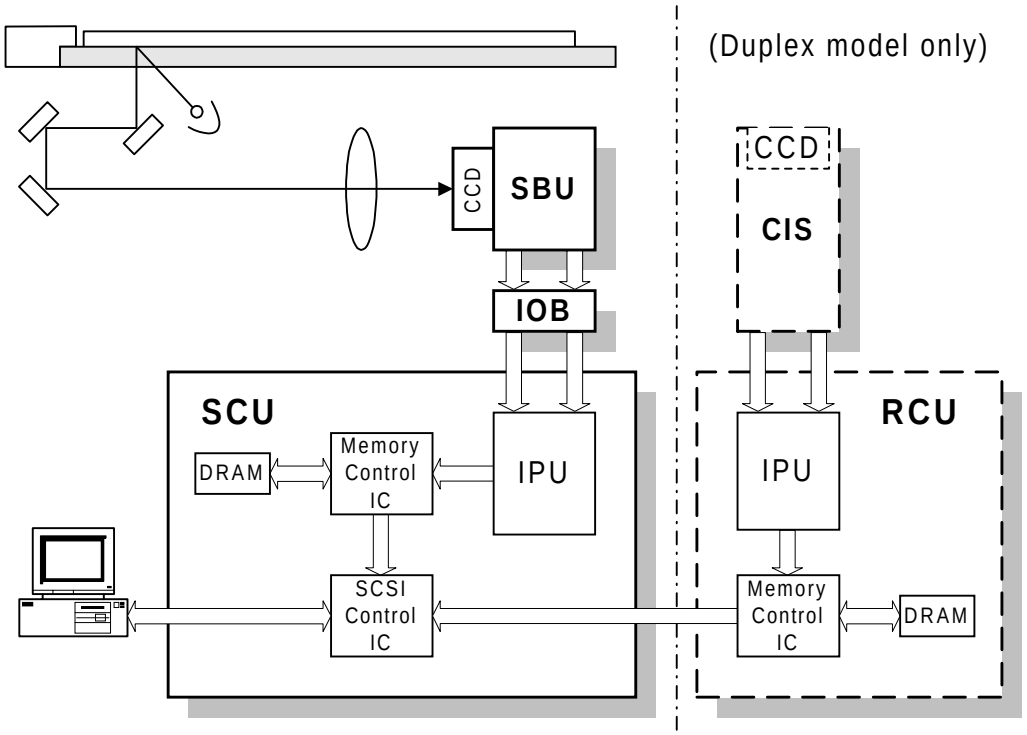
J6: The trailing edge of the original does not pass through the feed-out sensor within the time required for feeding the original length + 75 mm after the feed-out sensor was activated.

If an original jam or an original non-feed is detected, the paper transport motor, paper feed motor, and the exposure lamp turn off. Then, the appropriate LEDs inform the user of the machine's status.

If an original remains in the ADF, the original is fed out and the paper transport motor stops.

2.4 IMAGE PROCESSING

2.4.1 OVERVIEW

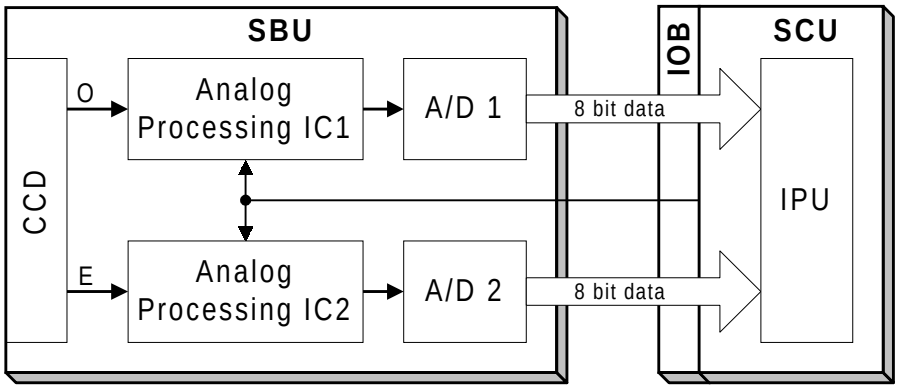


G411D508.WMF

The CCD generates two analog video signals. The SBU (Sensor Board Unit) converts these analog signals to 8-bit digital signals, then it sends these digital signals to the SCU (Scanner Control Unit) board through the IOB board. The IPU (Image Processing Unit) IC on the SCU does the image processing, then the image data goes to the computer through the Memory Control IC and the SCSI controller.

The CIS (Contact Image Sensor) unit in the duplex model for reverse-side scanning outputs two digital signals. The IPU on the RCU (Reverse Control Unit) board does the image processing, then the image data goes to the computer through the SCU.

2.4.2 SBU



G411D507.WMF

The CCD converts the light reflected from the document into an analog signal. The CCD line has 5,000 pixels and the resolution is 400 dpi (15.7 lines/mm).

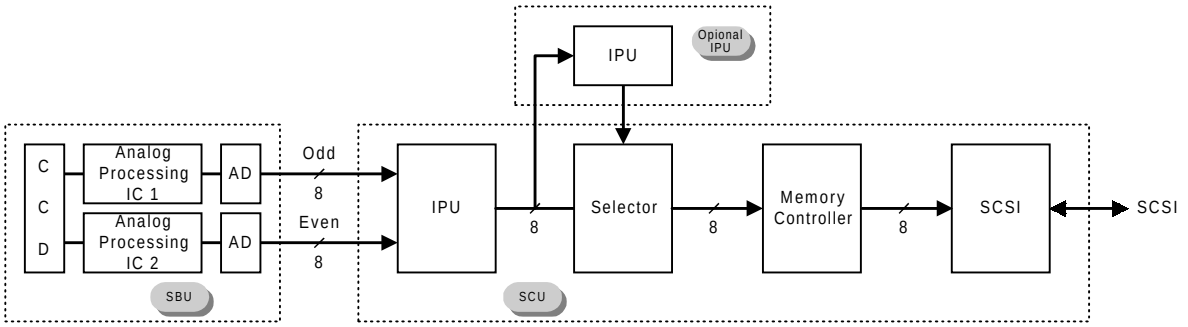
The CCD has two output lines, for odd and even pixels. Each of these has an analog processing IC. The analog processing IC performs the following operations on the signal from the CCD.

1. Z/C (Zero Clamp)
   Adjusts the black level reference for even pixels to mach the odd pixels.
2. Signal Amplification
   Operational amplifiers in the AGC (Auto Gain Control) circuit amplify the analog signal. The CPU on the SCU board controls the maximum gains of the operational amplifiers.

After the above processes, the analog signals are converted to 8-bit digital signals by the A/D converters. This gives a value for each pixel on a scale of 256 grades. Then these signals go to the SCU board.

2.4.3 IPU (IMAGE PROCESSING UNIT)

Overview



G411D505.WMF

The image data from the SBU goes to the IPU IC on the SCU board, which carries out the following processes on the image data.

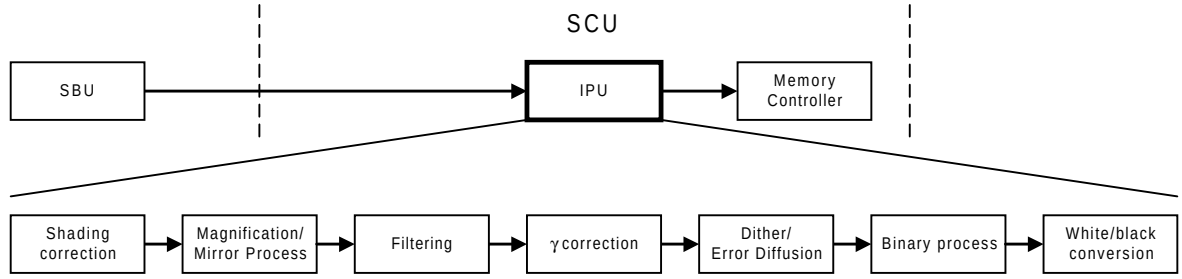
1. Auto shading
2. Magnification
3. Mirror processing
4. Filtering (MTF and smoothing)
5. γ (gamma) correction
6. Grayscale processing
7. Binary picture processing
8. Error diffusion
9. Dithering
10. White/black conversion

The image data then goes to the memory controller IC.

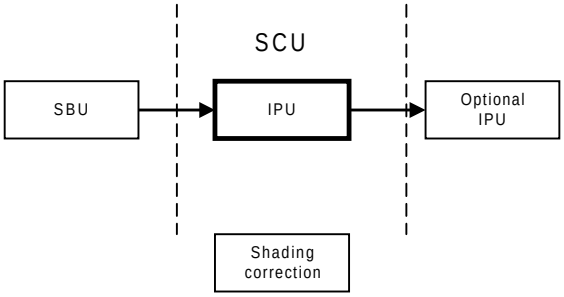
Image processing path

The following image processing is for the scanner (simplex model), not including the optional IPU. The image processing for each of these units is explained in separate sections. However, when the optional IPU is installed, the IPU IC on the SCU only does the shading.

1. Without Optional IPU



2. With Optional IPU



G411D500.WMF

Shading Correction

The machine scans the white plate opposite the ADF exposure glass to make a white waveform. Shading correction prevents uneven images caused by fluctuations in scanned data due to changes in light intensity and CCD sensitivity.

Magnification

Reduction and enlargement in the sub scan direction are done by changing the scanner motor speed or paper transport motor speed in the ADF. However, reduction and enlargement in the main scan direction are done by the IPU.

Mirror Processing

A mirror image of the original must be made for output.

Filtering

There are two software filters: the MTF filter and the smoothing filter. The MTF filter emphasizes sharpness, and is used with text-only documents or documents that contain text and photo areas. The smoothing filter is used for photo-image documents.

Gamma (γ) Correction

The gamma curve corrects the response of the CCD to grayscales in the original.

Grayscale Processing

This process generates up to 256 image density levels for each pixel.

Dithering

Dither processing produces good quality grayscale images of photo originals.

Error Diffusion

The error diffusion process reduces the difference in contrast between light and dark areas of a halftone image. Each pixel is corrected using the difference between it and the surrounding pixels. The corrected pixels are then compared with a matrix table.

Binary Picture Processing

Each video signal level is converted from 8-bit to 1-bit (black and white image data) in accordance with a threshold value.

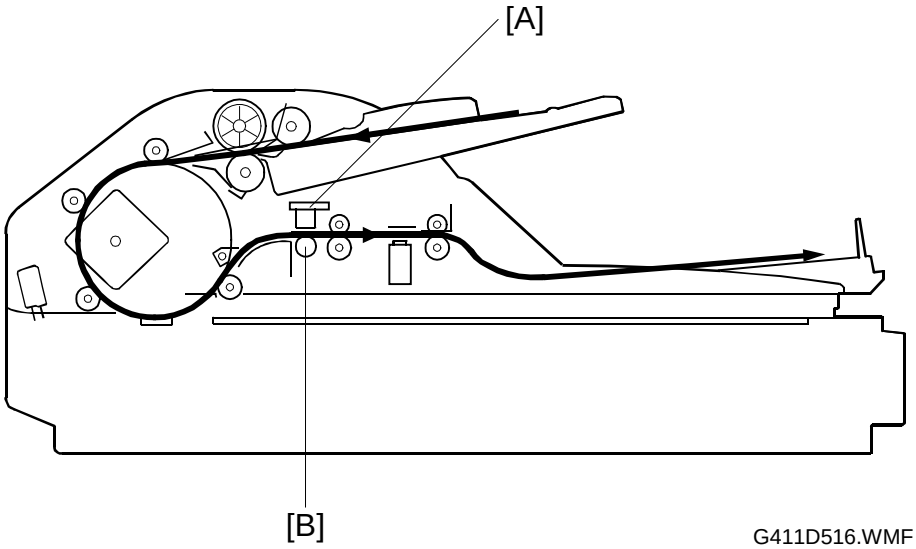
White/Black Conversion

Inverts the image (converts from white to black and vice versa).

After video processing, the data goes to the host computer through the memory and SCSI controllers.

2.5 REVERSE SIDE SCANNING

2.5.1 OVERVIEW

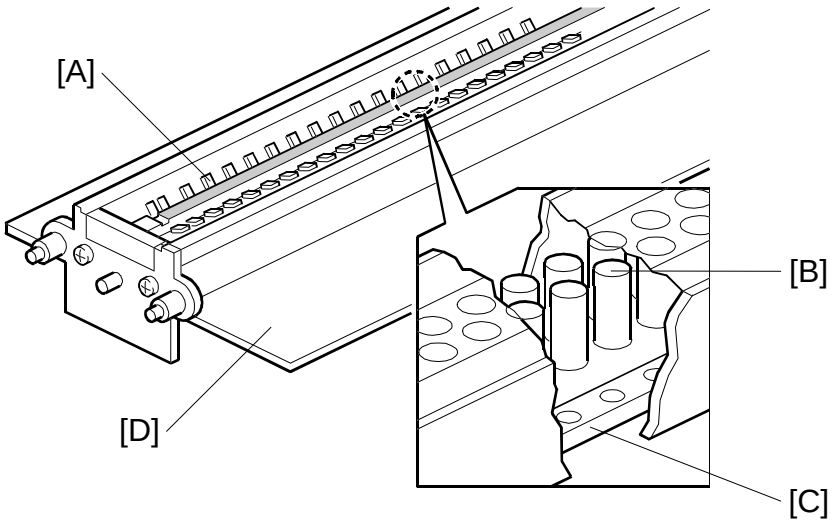


The CIS (Contact Image Sensor) unit [A], which is in the document exit area, scans the reverse side of the document.

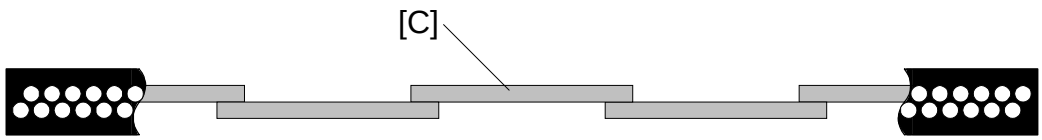
The front side of the document is scanned first. Then the document goes to the reverse side scanning area. The white roller [B] pushes the document against the CIS unit for scanning and feeds the document to the exit area.

The position of the CIS unit is fixed in the scanner, and cannot be adjusted in the field.

2.5.2 CIS (CONTACT IMAGE SENSOR) UNIT



G411D513.WMF



G411D528.WMF

The CIS unit consists of the LED array (68 chips/line x 2 lines) [A], rod lens array [B], five CCDs [C], and the CIS drive board [D] (this contains the CCD drive circuit, analog processing circuit, A/D converter, shading correction IC, and LED drive circuit). The CIS unit scans 4800 pixels in the main scan direction at a resolution of 400 dpi (15.7 lines/mm).

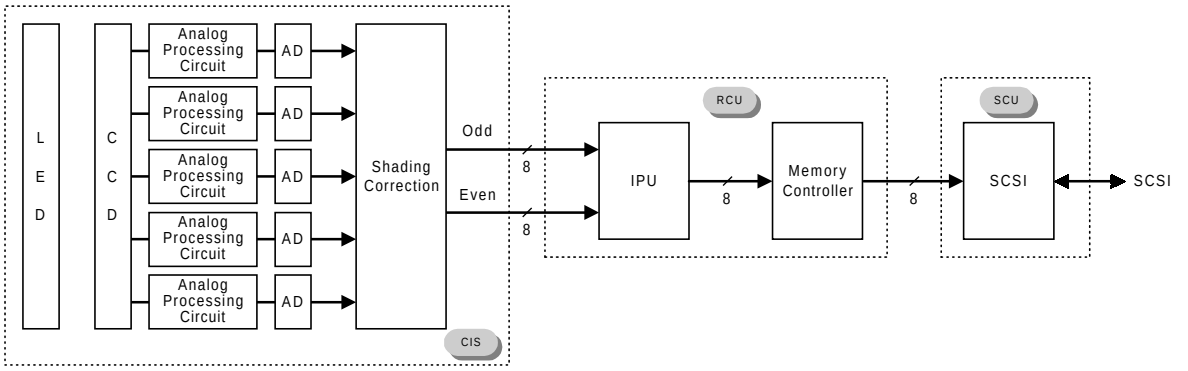
There is a row of LEDs on each side of the CCD so that the light is of almost equal intensity in all directions. This reduces shadows at the edges of documents.

The five CCDs are arranged as shown above (viewed from directly above the original feed path). The CCDs have dummy pixels at the ends, so to get a continuous scan across the page, the CCDs have to overlap. However, as a result, a continuous line cannot be scanned across the page at the same time. Data is held in memory and combined later.

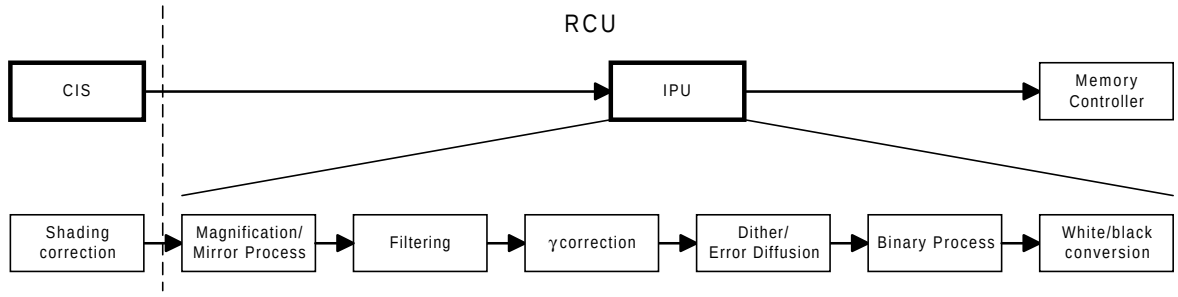
In book mode when scanning the front side, the scanner may stop if the buffer fills up. This may happen if the data is complex. Scanning may not start again in exactly the same place, due to mechanical inaccuracies. This is not a big problem when scanning the front side. However, for the reverse side, because a complete scan line is not scanned at the same time, it could mean loss of data.

Because of this, reverse side scanning is only enabled at 6 reproduction ratios (expressed in the driver as dpi: 100, 200, 300, 400, 500, and 600 dpi). This is because there is not enough memory to buffer the data and calculate the pixels for the resulting image at other resolutions without stopping the scanner.

2.5.3 IMAGE SCANNING



G411D504.WMF



G411D526.WMF

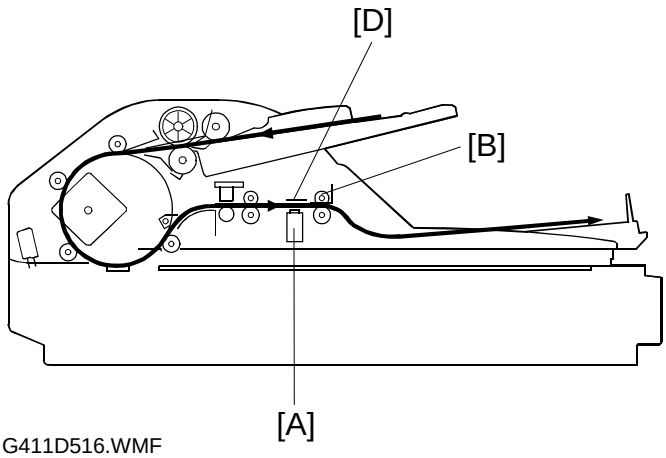
As explained on the previous page, the CIS unit contains five CCDs. The analog signal from each CCD goes to an analog processing IC. The function of the analog processing circuit is the same as for the SBU. After this, the analog signal is converted to a digital signal by the A/D converter. Then, the data goes to the shading circuit for correction. After shading, the data is divided to two signals: Odd and Even. Then, these go to the IPU on the RCU board.

The RCU board contains the IPU and memory controller ICs for image processing. The image processing in the IPU is the same as for the IPU in the SCU except for the shading correction.

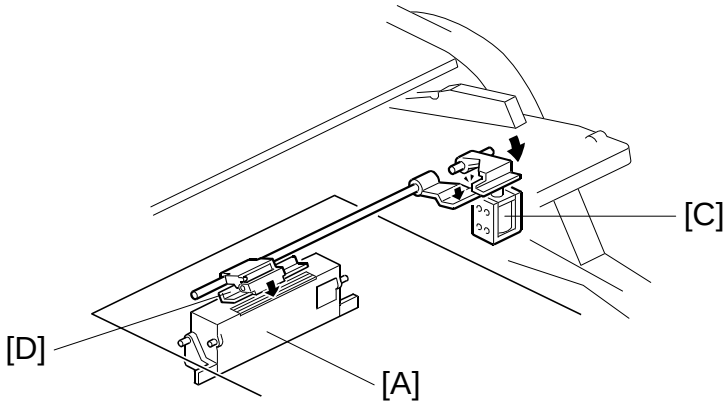
After image processing, the data goes to the PC through the SCSI controller on the SCU.

2.6 ENDORSER UNIT

2.6.1 OVERVIEW



G411D516.WMF



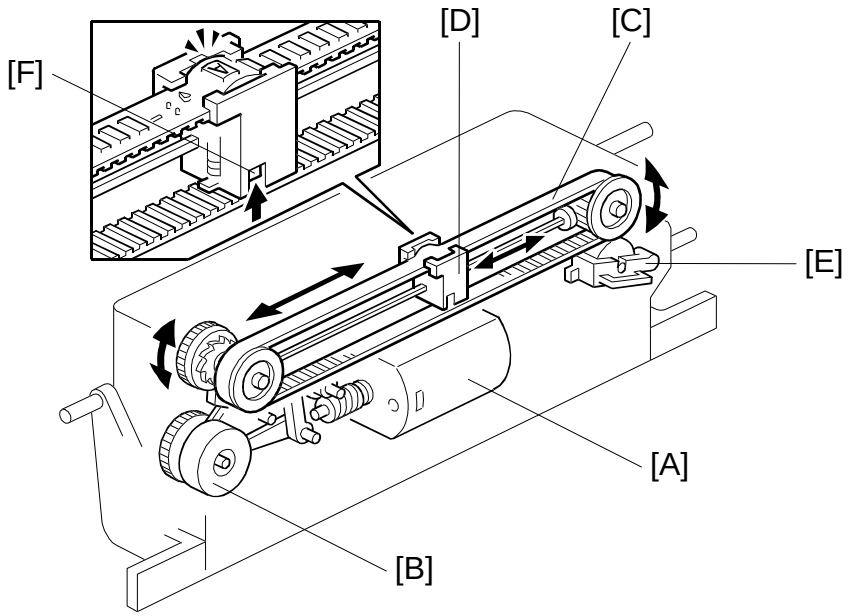
G411D514.WMF

The endorser unit [A] is located just before the exit roller [B]. The endorser unit prints up to 19 characters (which are input using the scanner driver) at the trailing edge of the document.

The endorser operates as follows.

1. The user inputs characters and enables the endorser function using the scanner driver.
2. The scanner operates in the normal ADF mode.
3. The paper transport motor stops at a certain time after the leading edge of the paper passes through the feed-out sensor.
4. The endorser motor turns on.
5. The endorser solenoid [C] is energized and the paper holding plate [D] goes down to hold the original.
6. The endorser prints the characters.
7. After printing, the endorser motor turns off.
8. The endorser solenoid is de-energized and the paper holding plate goes up to release the original.
9. The paper transport motor turns on again, and the original is fed to the original tray.

2.6.2 ENDORSER UNIT



G411D515.WMF

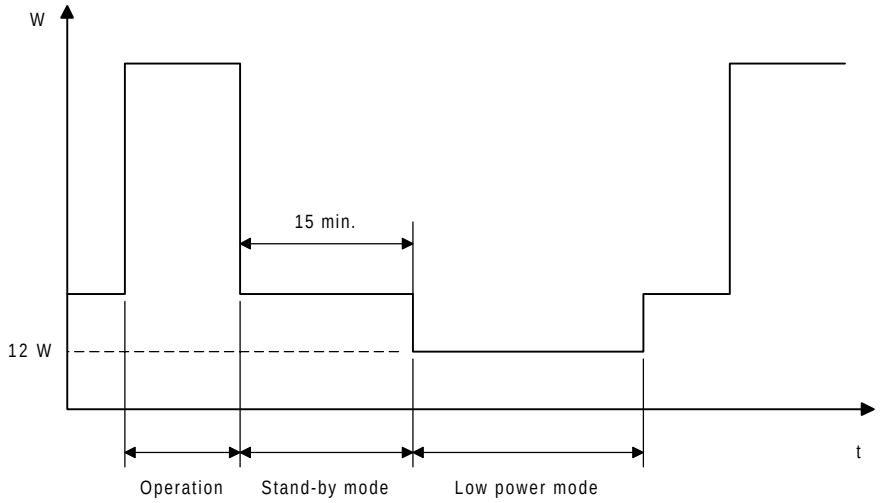
The endorser unit consists of the endorser motor [A], clutch [B], character belt [C], hammer unit [D], and ink roller [E].

The endorser motor drives the character belt and hammer unit and operates the hammer [F].

The clutch controls the print timing.

The ink roller always contacts the character belt and always supplies ink to the belt. When the ink is used up, the customer replaces only the ink roller.

2.7 LOW POWER MODE



G411D525.WMF

When the scanner has been idle for 15 minutes (this interval cannot be adjusted), the scanner automatically enters low power mode. However, the scanner cannot enter low power mode when a document jam or system error exists.

NOTE: The scanner can enter low power mode if the ADF cover and/or platen cover is open or paper remains on the document table.

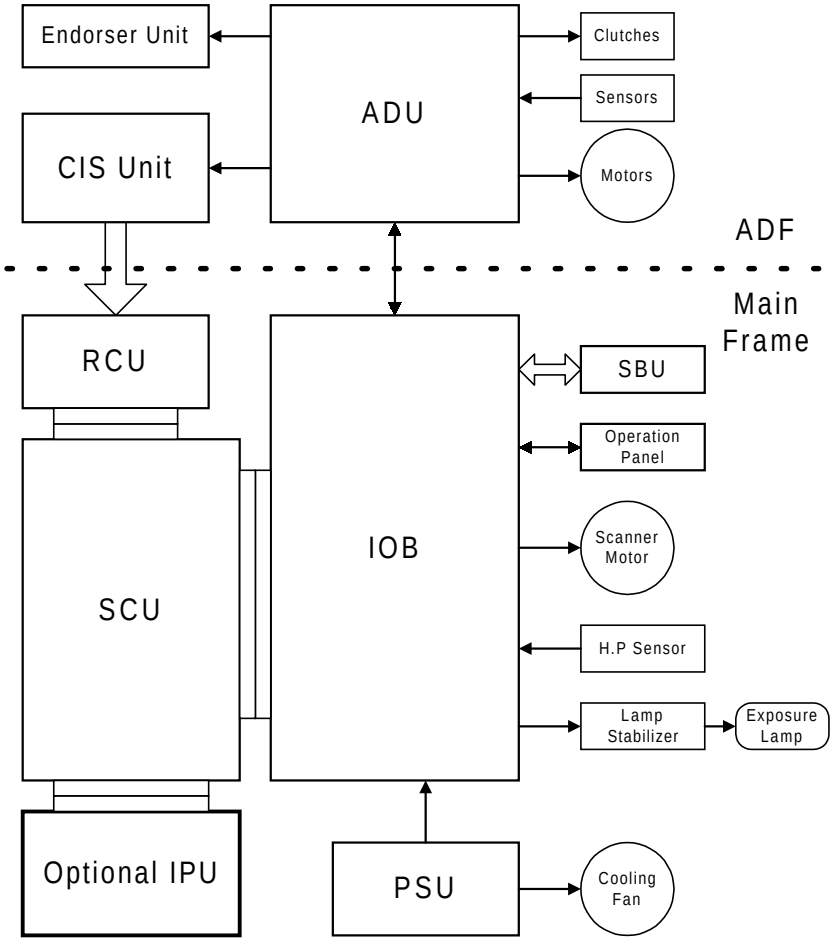
When the scanner enters low power mode, the PSU cuts the +24 V, +12 V, –12 V and +5 Vs supplies, and continues to supply +5VE only. As a result, the scanner consumes less than 12 W. The operation panel indicates that the machine is in low power mode with the following LEDs.

LED	Status
Power on	Blinking
Machine busy	Off
Document in place	Off
Error	Off

The scanner returns to stand-by mode when the ADF cover and/or platen cover is opened and closed, or when the user places a document on the document table, or when a Read command is received from the computer.

2.8 MAIN PCBs AND THEIR FUNCTIONS

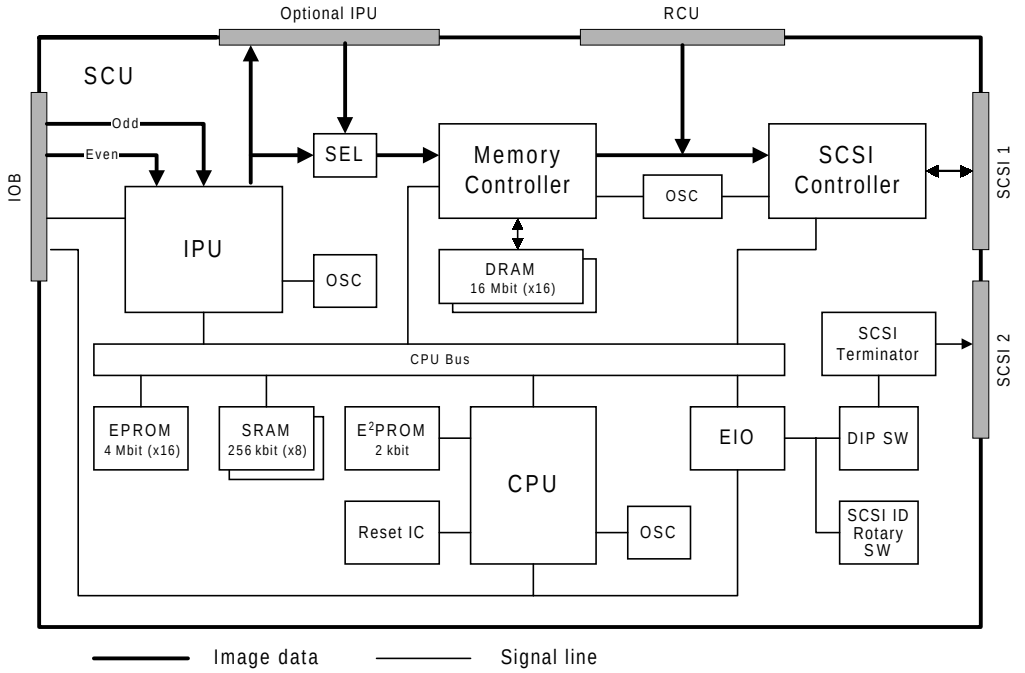
2.8.1 BOARD STRUCTURE



G411D509.WMF

For the main function of each PCB, refer to the Electrical Component Layout section.

2.8.2 SCU (SCANNER CONTROL UNIT)



G411D512.WMF

This is the main board. The functions of each component are as follows.

CPU: HD6413002F

- Scanner sequence control
- Clock/timer control
- DMA control

IPU (Image Processing Unit):

- Shading correction
- Image processing (Mirror image, reproduction ratios, MTF correction, binary picture processing, edge extraction, and so on)

Memory Controller:

- Stores the image data from the IPU in the memory (DRAM 32 Mbytes x 2).
- Address control when recalling the data from the memory.

SCSI controller: SCSI interface controller.

SRAM: Work area (32 kbytes)

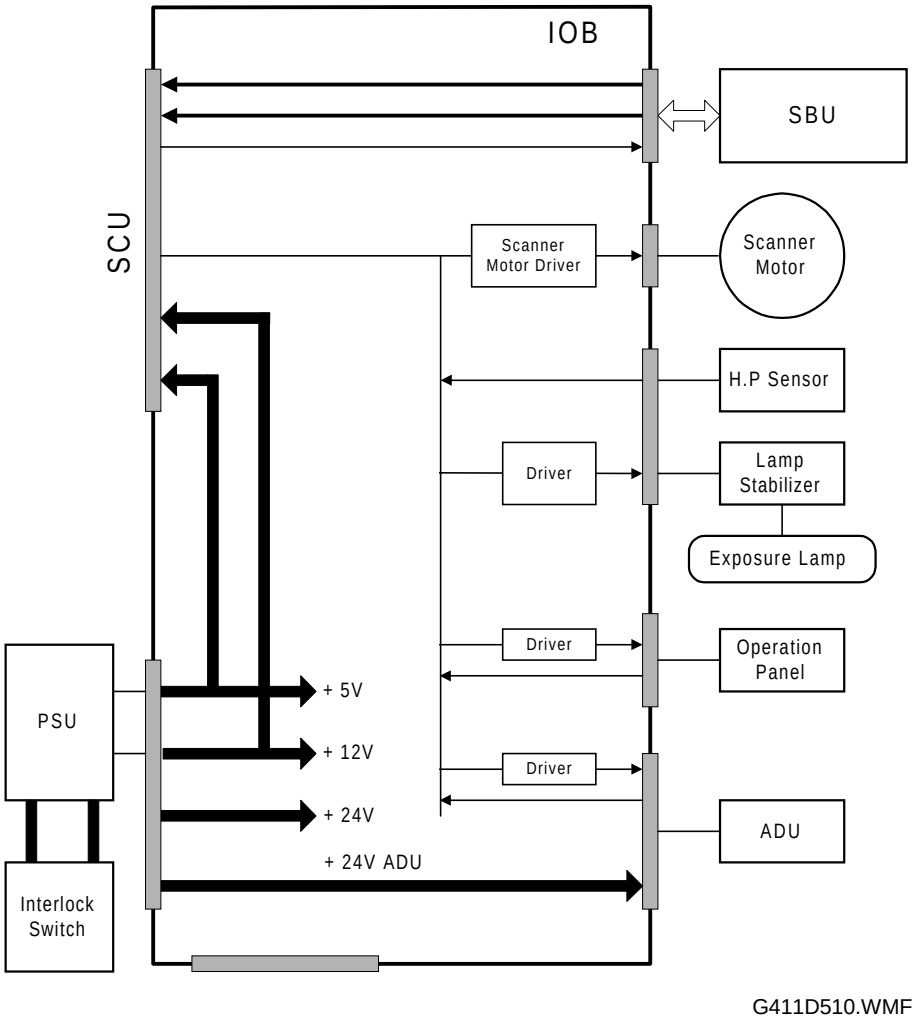
EPROM: Contains the program.

Enhanced I/O (EIO):

- Extension for the I/O port.
- DIP switches (mode selection), rotary switches (SCSI ID setting), and a push switch (reset button) are connected.

E^2PROM: Holds the book, ADF, and lamp counter values.

2.8.3 IOB (INPUT/OUTPUT BOARD)

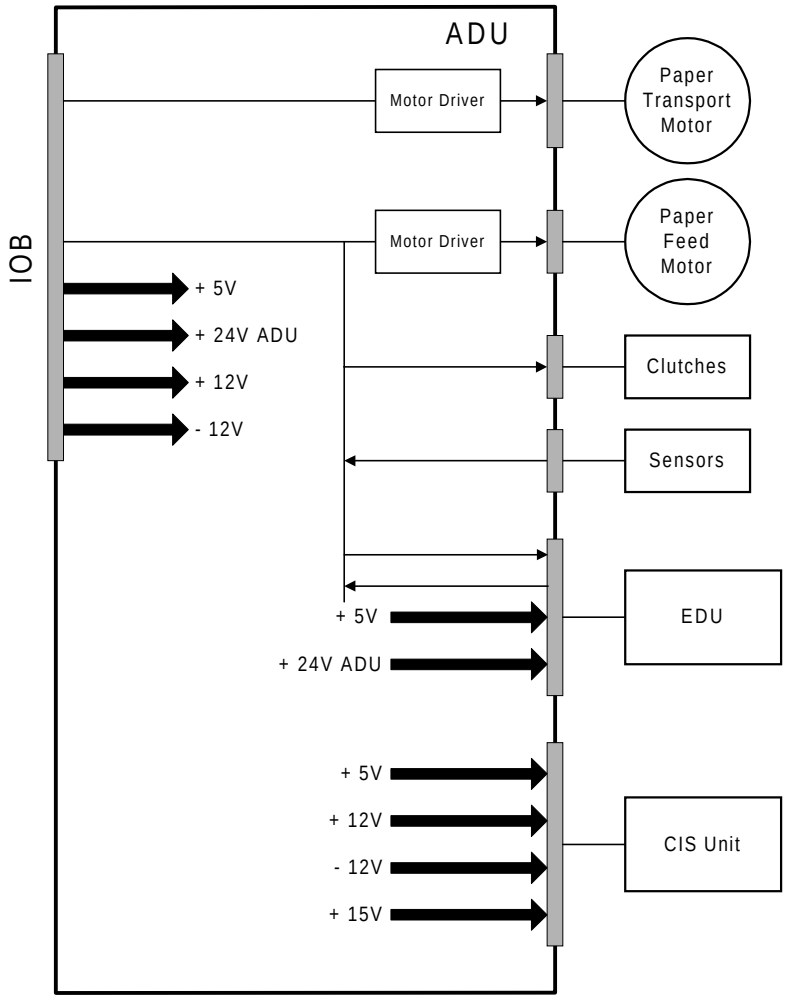


G411D510.WMF

The IOB contains the drive circuits for the scanner motor and the exposure lamp. The control signals such as drive and rotation direction, and drive current for the scanner motor come from the SCU. Also, the control signal for the exposure lamp comes from the SCU.

The image signals from the SBU go through this board to the SCU.

2.8.4 ADU (ADF DRIVE UNIT)



G411D511.WMF

The ADU drives the motors and clutches in the ADF unit. Also, it informs the sensor status to the SCU.

The SCU generates the control signals for each electrical component and the endorser, then these are sent to the ADU through the IOB. The drivers on the ADU convert the control signals into drive pulses for the motors.

3. INSTALLATION

3.1 ENVIRONMENT

3.1.1 PRECAUTIONS

Please observe the following precautions in order to ensure safe operation of the scanner and to realize its full performance.

- Ambient illumination must be less than 2,000 lux (do not expose to direct sunlight).
- Do not use the scanner in any location that is exposed to frequent vibration.
- Do not expose the scanner to dusty or corrosive atmospheric conditions.
- Ensure that the area in which the scanner is used is well ventilated (30 m^3/hr/person).
- Make sure that the surface on which you place the scanner is stable and level.

3.1.2 ENVIRONMENTAL CONDITIONS

Temperature: 10°C to 32°C (50 to 90°F)

Humidity: 20 to 80 %

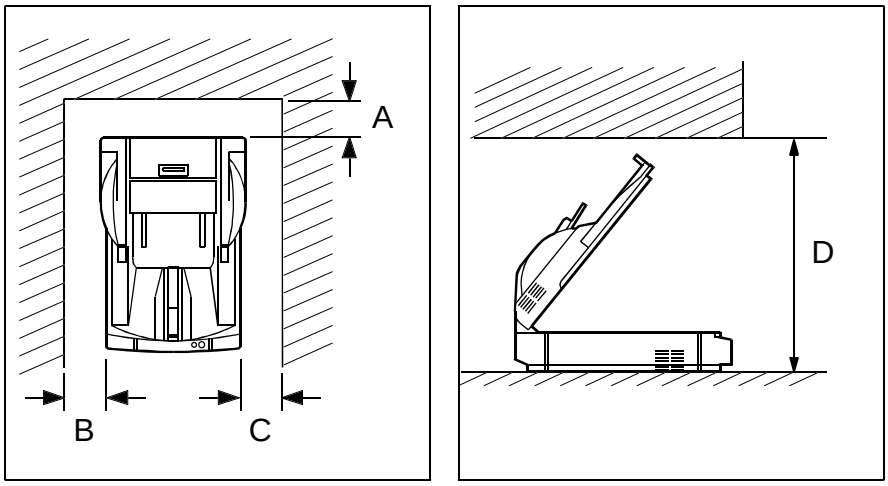
3.1.3 MACHINE LEVEL

1. Front to back: Within 5 mm (0.2") of level
2. Right to left: Within 5 mm (0.2") of level

3.1.4 MINIMUM SPACE REQUIREMENTS

Place the scanner near a power source, providing clearance as shown.

A: 10 mm (0.2") B: 30 mm (1.2") C: 600 mm (23.7")



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3.1.5 POWER REQUIREMENTS

⚠CAUTION

1. **Be sure to ground the scanner.**
2. **Make sure the plug is firmly inserted in the outlet.**
3. **Avoid multi-wiring.**

1. Input voltage level:
   - 102 to 138 V ac (45 to 65 Hz)
   - 187 to 276 V ac (45 to 65 Hz)
2. Permissible voltage fluctuation: ± 10%

3.2 SCANNER INSTALLATION

Please refer to the scanner user's manual for details.

3.3 IPU UNIT INSTALLATION

Please refer to the scanner user's manual for details.

3.4 ENDORSER UNIT INSTALLATION

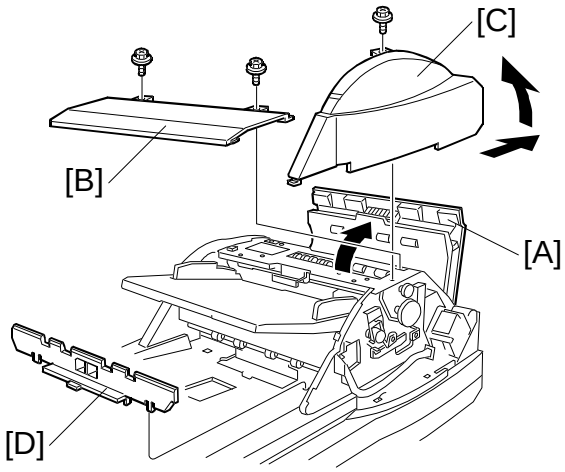
3.4.1 ACCESSORY CHECK

Check the quantity and condition of the accessories in the box against the following list:

Description	Q'ty
1. Endorser Unit	1
2. Solenoid Ass'y	1
3. EDU Board	1
4. Harness	1
5. Ink Roller	1
6. Decal	1
7. Screw - M3 x 6	2
8. Card Spacer	1
9. Installation Procedure	1

3.4.2 INSTALLATION PROCEDURE

1. Open the ADF cover [A]. Remove the ADF upper cover [B] (2 screws), ADF right cover [C] (1 screw), and the endorser cover [D].
   NOTE: Remove the right cover by carefully lifting it from the rear.



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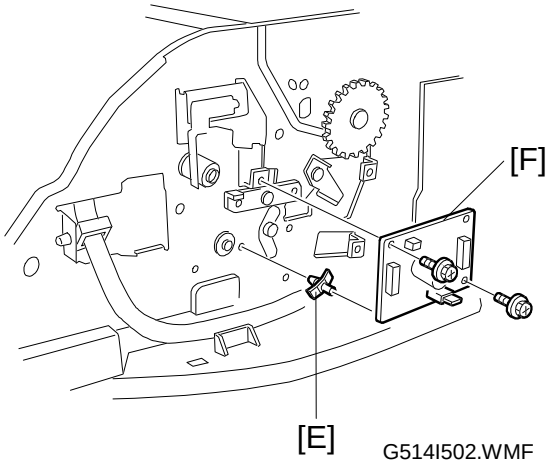
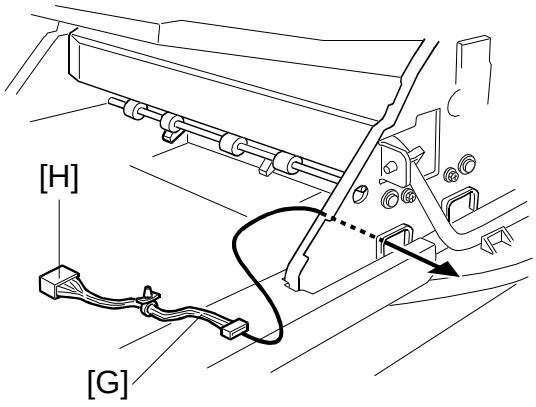
2. Install the spacer [E] and the EDU board [F] (2 screws).



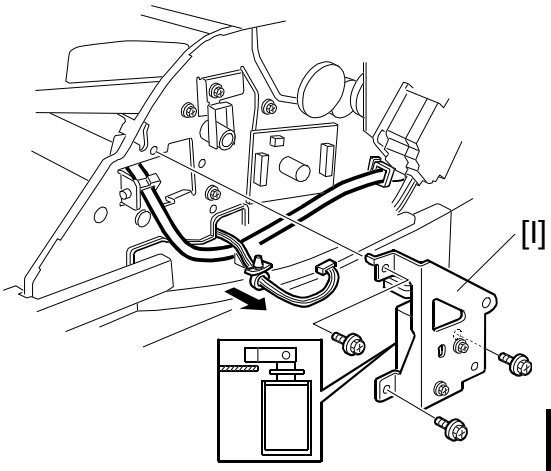
G514I502.WMF

3. Route the cable [G] as shown.
   NOTE: Ensure that the end of the cable with the large connector [H] is toward the inside of the machine.



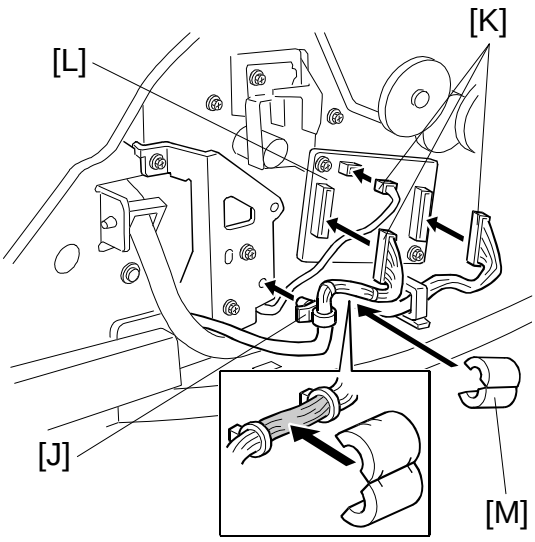
G514I503.WMF

4. Install the solenoid assembly [I] as shown (3 screws).



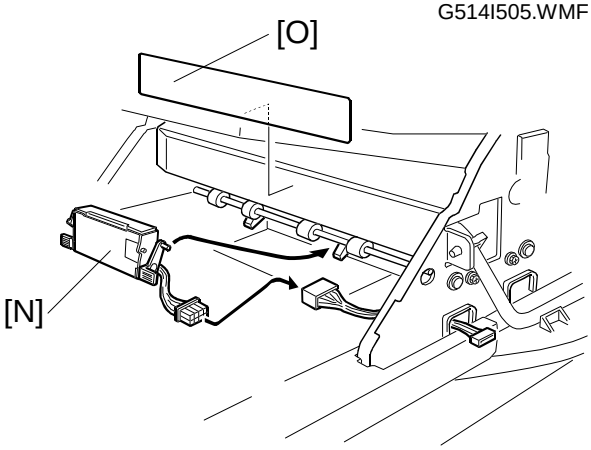
G514I504.WMF

5. Install the clamp [J] and connect the three cables [K] to the EDU board [L].
6. Install the core [M].



G514I505.WMF

7. Open the platen cover. Install the endorser unit [N], as shown (1 connector).
8. Attach the decal [O].



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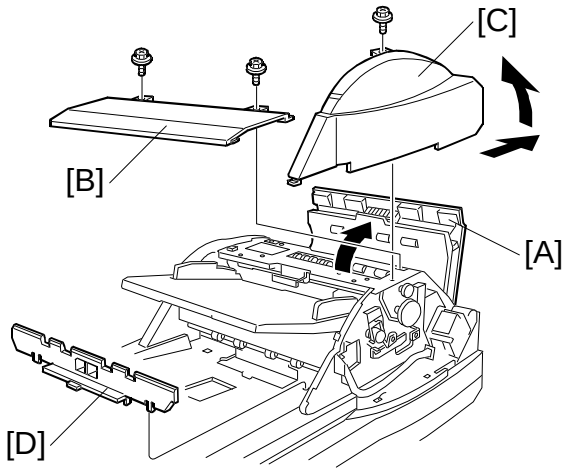
9. Reinstall the endorser, right, and upper covers.

3.4.3 STAMP DENSITY ADJUSTMENT PROCEDURE

1. Open the ADF cover [A]. Remove the ADF upper cover [B] (2 screws), ADF right cover [C] (1 screw), and the endorser cover [D].
   NOTE: Remove the right cover by carefully lifting it from the rear.



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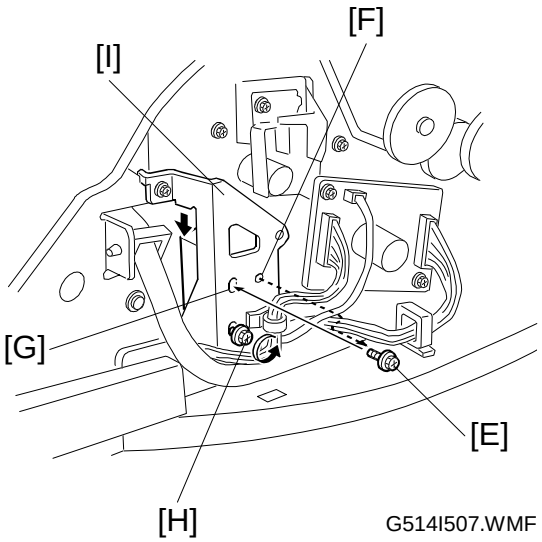
2. Remove the solenoid assembly screw [E] from the hole [F] and replace it in hole [G]. Do not tighten the screw yet.
3. Loosen the screw [H] and adjust the height of the bracket [I].
   NOTE: To reduce the stamp density, raise the bracket. To increase the density, lower the bracket.
4. Tighten the assembly screw [E] to secure the bracket in the new position.
5. Reinstall the endorser, right, and upper covers.



G514I507.WMF

3.5 RED LAMP UNIT INSTALLATION

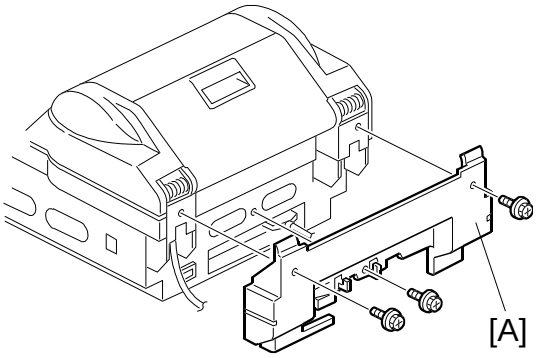
3.5.1 ACCESSORY CHECK

Check the quantity and condition of the accessories in the box against the following list:

Description	Q'ty
1. Exposure Lamp	1
2. Installation Procedure	1

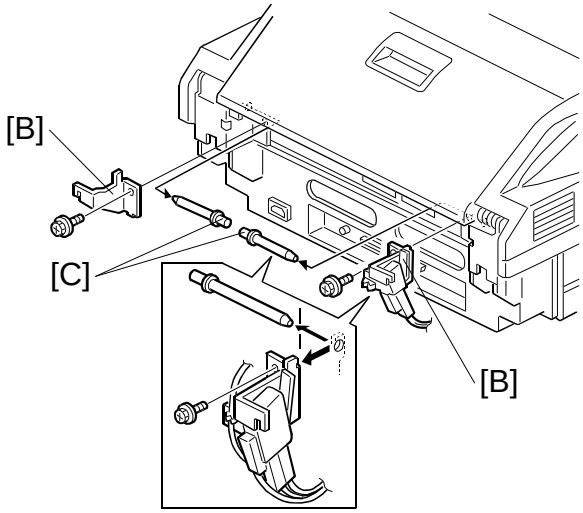
3.5.2 INSTALLATION PROCEDURE

1. Remove the rear cover [A] (3 screws).



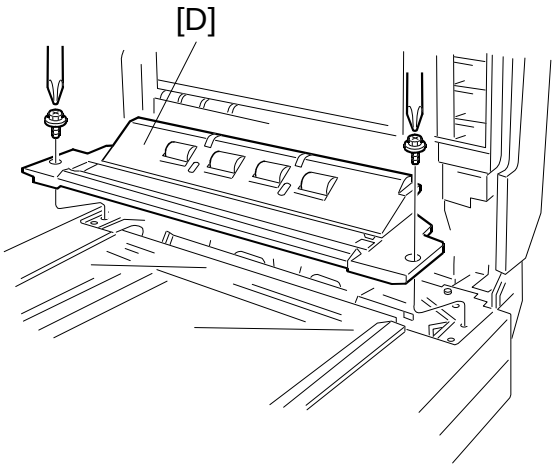
G514I500.WMF

2. Remove the stopper brackets [B].
3. Remove the pins [C].



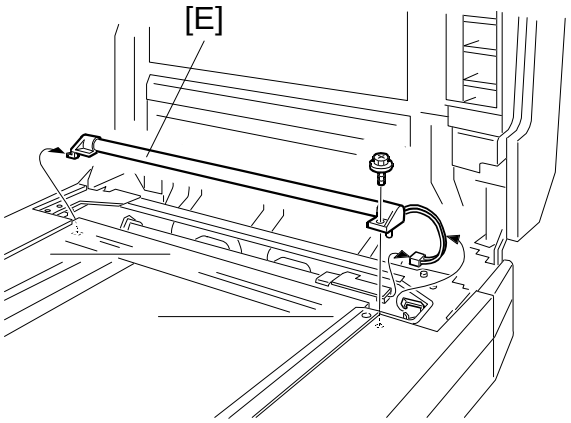
G514I510.WMF

4. Open the platen cover and remove the lamp cover [D] (2 screws).



G514I508.WMF

5. Remove the exposure lamp [E] (1 screw).



G514I509.WMF

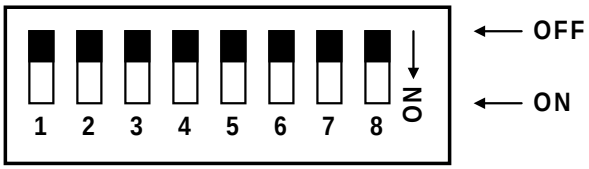
6. Install the red lamp (1 screw, 1 connector) in the place of the exposure lamp.
7. Reinstall the lamp cover, the pins, the stopper brackets, and the rear cover.

4. SERVICE LEVEL FUNCTIONS

4.1 DIP SWITCH SETTINGS

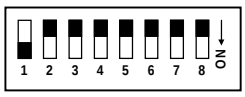
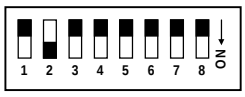
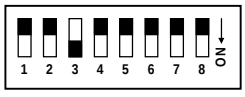
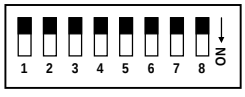
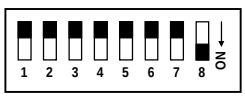
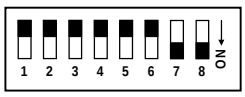
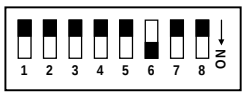
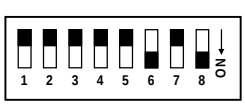
The factory default position of the dip switches is indicated in the diagram below.

After changing a dip switch setting, either switch the power off and then on again, or press the reset switch.

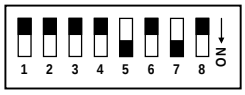
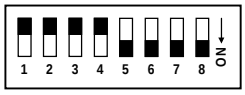


G411M500.WMF

Dip Switch Setting Table

Dip Switch	Item	Contents
	SCAM function switch	OFF: SCAM function enabled ON: SCAM function disabled
	SCSI synchronous transfer switch	OFF: SCSI synchronous transfer enabled ON: SCSI synchronous transfer disabled
	Internal SCSI terminator switch	OFF: Internal SCSI terminator on ON: Internal SCSI terminator off
Do not adjust switch 4. This is for factory use only.		
Service level test modes		
	Various tests for the scanner are carried out using dip switches 5 to 8. Within each test mode, tests are selected by turning the SCSI ID rotary switch, and the machine's condition is indicated by the four LEDs on the covers. Note the position of the SCSI ID rotary switch before you change it. To return to normal operation mode after testing, switch dip switches 5 to 8 all off, return the SCSI ID rotary switch to its operating position, then press the reset button.	
	Demonstration mode	Scanner demonstration in book and ADF modes; Refer to Table A later in this section.
	Component test mode	Each component can be tested; refer to Table B later in this section.
	Sensor test mode	Each sensor can be tested; refer to Table C later in this section.
	Self diagnostic mode	Results of the diagnosis are indicated through a combination of the LEDs on the covers; refer to Table D later in this section and “Troubleshooting” in section 6.

Service Tables

Dip Switch	Item	Contents
	ADF counter indication	The number of pages scanned in ADF mode is indicated through a combination of the SCSI ID rotary switch position and the LEDs; refer to Table E later in this section. (Unit = 1 sheet, Max. value = 2,500k sheets)
	Book mode counter indication	The number of pages scanned in book mode is indicated in the same way as described above for ADF mode; refer to Table E later in this section. (Unit = 1 sheet, Max. value = 1,000k sheets)
	Exposure lamp on time indication	The total illumination time of the lamp is indicated in the same way as above. (Unit = 1 hour, Max. value = 3,000 hours)
	CIS on time indication	The total illumination time of the CIS is indicated in the same way as above.
	ADF counter indication (Reverse side)	The number of pages scanned in ADF mode is indicated in the same way as above. (Unit = 1 sheet, Max. value = 2500 k sheets)
	Endorser character counter indication	The number of endorser characters is indicated in the same way as above.
	Counter reset mode	After the dip switches are set to on, and the Start button is held down for more than 3 seconds, all LEDs are turned off, all counters which are stored in the E^2PROM are cleared. (These counters are the ADF mode, book mode, exposure lamp, CIS and endorser character counters.)

NOTE: If you change the position of the SCSI ID rotary switch during these tests, be sure to put it back to the original position after you have finished.

Table A: Demonstration Mode

SCSI ID Rotary Switch No.	Contents
0	200 dpi scan in book mode
1	400 dpi scan in book mode
2	200 dpi scan in ADF mode
3	400 dpi scan in ADF mode
4	200 dpi scan in endorser mode
5	400 dpi scan in endorser mode
6	200 dpi scan in duplex mode
7	400 dpi scan in duplex mode
8	ADF free run *[1]
9	Not used

*[1]: The scanner drives the ADF without any documents.

NOTE: During the demonstration, the LEDs indicate the machine status as usual. But if an error occurs during the demonstration (e.g. mis-feed, jam, etc.), the scanner stops, and the LEDs indicate the error condition.

Table B: Component Test Mode

SCSI ID Rotary Switch No.	Contents
0	All components off
1	Exposure lamp on/off *[1]
2	Document table lift clutch on/off *[1]
3	Pick-up clutch on/off *[1]
4	CIS LEDs on/off *[1]
5	Endorser solenoid *[1]
6	Cooling fan motor on/off
7	Not used
8	Not used
9	Not used

*[1]: When the Start button is pressed to start the test, the component turns on and off repeatedly.

Table C: Sensor Test Mode

SCSI ID Rotary Switch No.	Contents
0	Home position sensor
1	Read sensor
2	Document table position sensor
3	Document sensor
4	ADF cover interlock switch
5	Feed sensor
6	Feed-out sensor
7	Relay sensor
8	Not used
9	Not used

If the selected sensor is on, all LEDs turn on. If the selected sensor is off, all LEDs turn off.

Table D: Self Diagnostic Mode

During the self-diagnostic mode, the scanner performs the following tests.

1) Home position error check
2) Exposure lamp error check
3) White level error check
4) Document table error check
5) SCU error check
6) RCU error check
7) IPU error check
8) CIS LEDs error check
9) Memory error check

If the scanner detects errors, the first error that occurred is indicated by a combination of four LEDs.

Error Items	LEDs			
	Power On (Green)	Machine Busy (Green)	Document in Place (Green)	Error (Red)
SCU error	Blinking	—	—	Blinking
RCU error	Blinking	—	On	Blinking
IPU error	Blinking	On	—	Blinking
Home position error	Blinking	Blinking	Blinking	On
Exposure lamp error	Blinking	Blinking	On	On
White level error	Blinking	Blinking	—	—
CIS Leds error	Blinking	Blinking	On	Blinking
Memory error (Simplex)	Blinking	—	—	—
Memory error (Duplex)	—	Blinking	—	—

On: LED on Blinking: LED blinking —: LED off

Table E: Counter Indication Mode

Rotary Switch Table

SCSI ID Rotary Switch No.	Contents
0	Not used
1	Units
2	Tens
3	Hundreds
4	Thousands
5	Ten thousands
6	Hundred thousands
7	Millions
8	Not used
9	Not used

LED Indication Table

Counter Value	LEDs			
	Power On (Green)	Machine Busy (Green)	Document in Place (Green)	Error (Red)
0	—	—	—	—
1	—	—	—	On
2	—	—	On	—
3	—	—	On	On
4	—	On	—	—
5	—	On	—	On
6	—	On	On	—
7	—	On	On	On
8	On	—	—	—
9	On	—	—	On

On: LED on —: LED off

Use the rotary switch to select a digit of the counter. The value of the selected digit is indicated by a combination of the four LEDs. For the LEDs, “ON” represents a 1 and “OFF” represents a 0. The four LEDs are read off as a four-bit number.

Example:

Rotary switch no LED condition

1 (units)	(ON, OFF, OFF, OFF)	= 1000	= 8
2 (tens)	(OFF, OFF, ON, ON)	= 0011	= 3
3 (hundreds)	(OFF, ON, OFF, ON)	= 0101	= 5
4 to 7	(OFF, OFF, OFF, OFF)	= 0000	

>>> Total counter value = 538 sheets

4.2 LEDs/TEST POINTS

4.2.1 LEDs

SCU/LEDs

Number	Monitored Signal
LED1	+5VS
LED2	+5VE
LED3	CPU clock

4.2.2 TEST POINTS

ADU

Number	Monitored Signal
TP301	+24 V
TP302	–12 V
TP303	+12 V
TP304	COM
TP305	+5VE
TP308	+5VS
TP309	COM

4.3 SPECIAL TOOLS

Part Number	Part Name
A0069104	Scanner Positioning Pin (4 pcs/set)
G4049003	RS-13 Chart (A5)
G4049005	RS-13 Chart (A4)
G4049004	RS-13 Chart (A3, 55 kg)
G4049006	RS-13 Chart (A3, 90 kg)
H2039114	RS-12 Chart (A3)

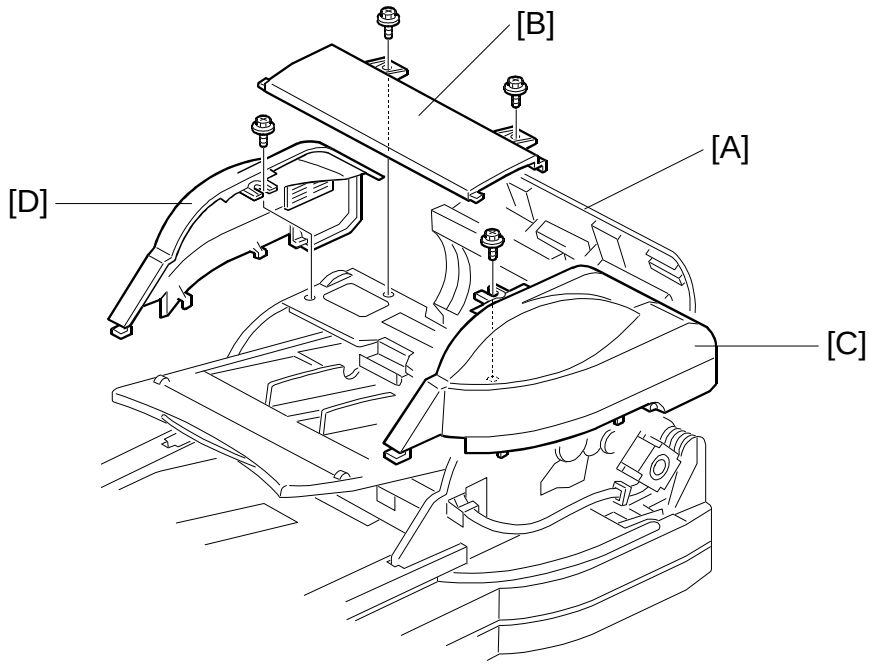
5. REPLACEMENT AND ADJUSTMENT

⚠CAUTION

Before starting disassembly, be sure to turn off the main switch and disconnect the power cord and interface cable(s) for safety.

5.1 COVERS

5.1.1 ADF EXTERIOR



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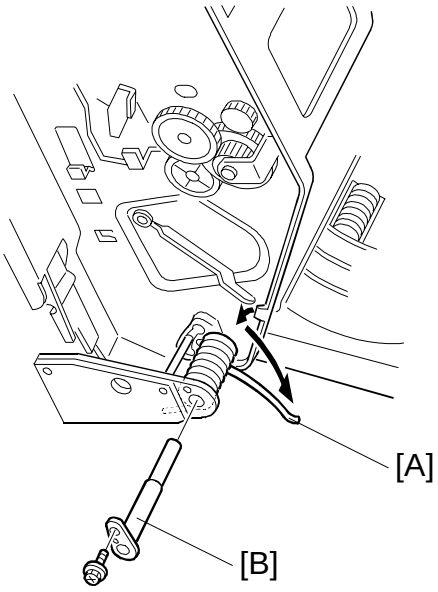
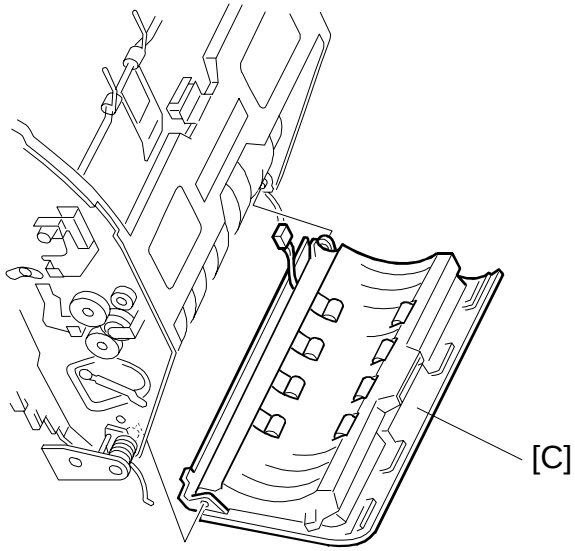
1. Open the ADF cover [A].
2. Remove the ADF upper cover [B] (2 screws).
3. Remove the ADF right cover [C] (1 screw).
   NOTE: Remove the ADF right cover by carefully lifting it from the rear.
4. Remove the ADF left cover [D] (1 screw).

5.1.2 ADF COVER



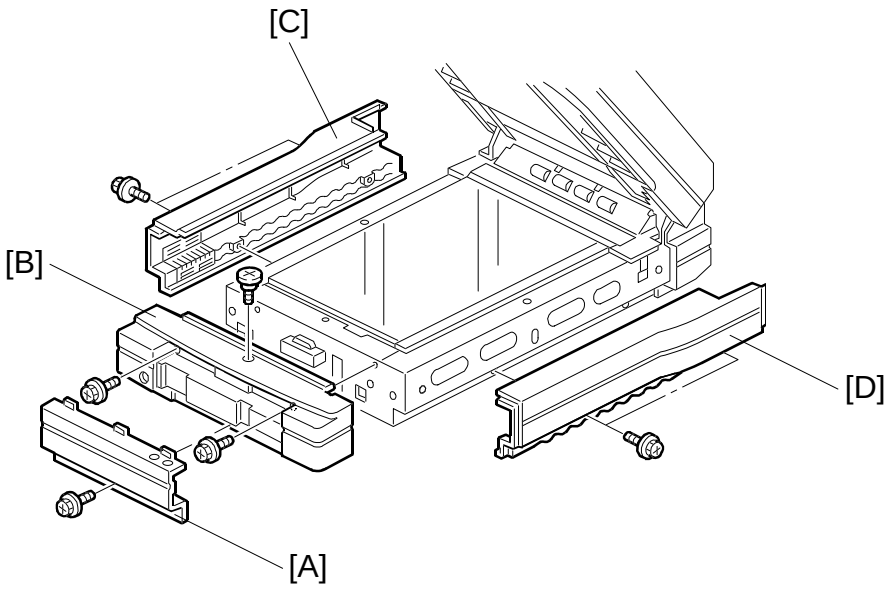
G411R501.WMF



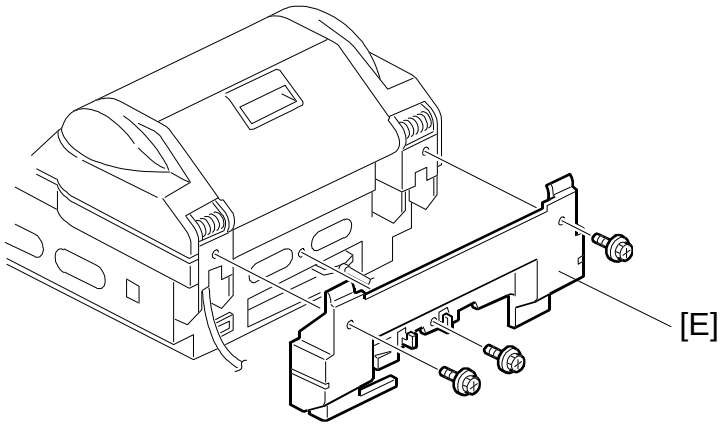
G411R502.WMF

1. Remove the ADF upper and ADF right cover (see ADF Exterior).
2. Remove the rear cover (see Scanner Exterior/Operation Panel).
3. Open the platen cover vertically (see Exposure Glass).
4. Remove the spring [A].
5. Remove the pin [B] (1 screw).
6. Remove the ADF cover [C] (1 connector).

5.1.3 SCANNER EXTERIOR/OPERATION PANEL



G411R503.WMF

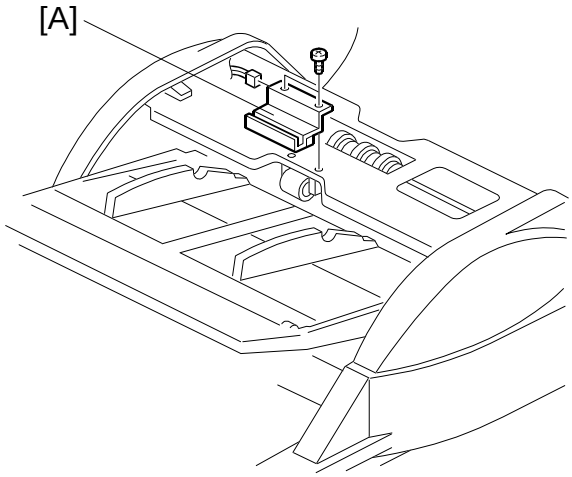


G411R504.WMF

1. Remove the operation panel [A] (1 screw).
2. Remove the front cover [B] (3 screws).
3. Remove the left cover [C] (2 screws).
4. Remove the right cover [D] (2 screws).
5. Remove the rear cover [E] (3 screws).

5.2 ADF AND UPPER SIDE

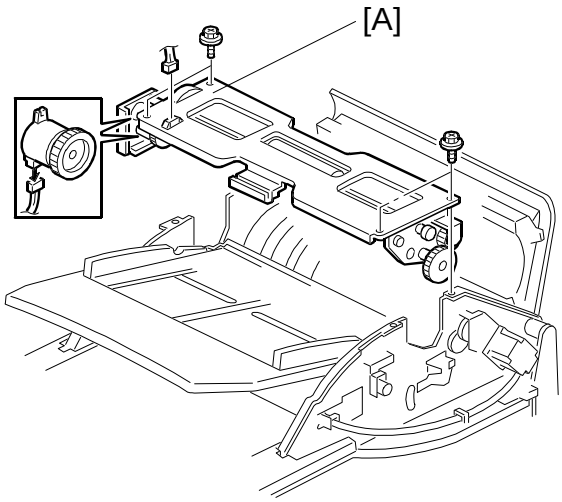
5.2.1 DOCUMENT SENSOR



G411R505.WMF

1. Remove the ADF upper cover (see ADF Exterior).
2. Remove the document sensor [A] (1 connector, 2 screws).

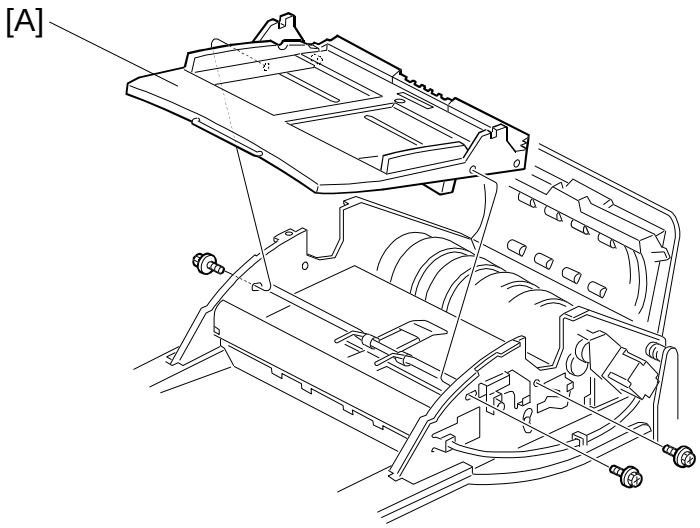
5.2.2 SEPARATION UNIT



G411R506.WMF

1. Remove the ADF upper, ADF left, and ADF right cover (see ADF Exterior).
2. Remove the separation unit [A] (3 connectors, 4 screws).

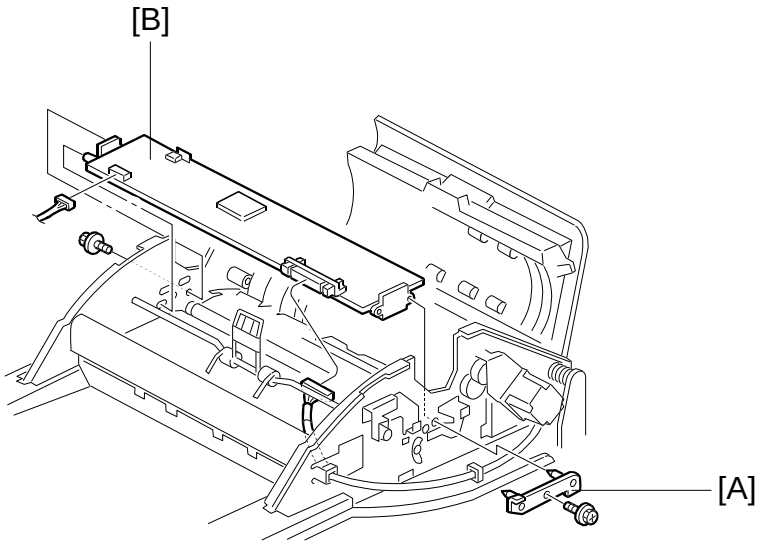
5.2.3 DOCUMENT TABLE ASSEMBLY



G411R507.WMF

1. Remove the separation unit (See Separation Unit).
2. Remove the document table assembly [A] (3 screws).

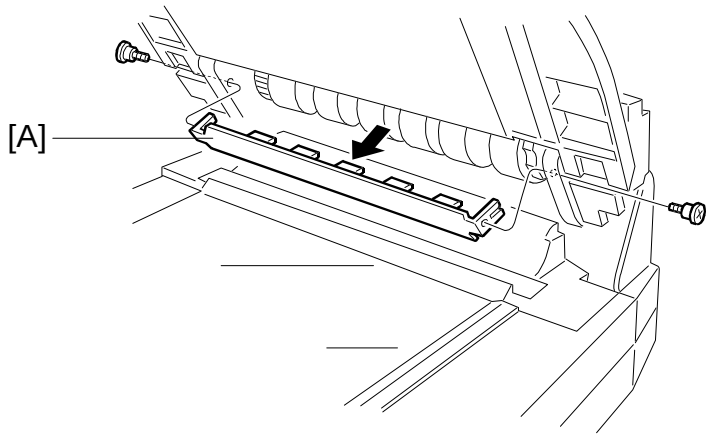
5.2.4 CIS



G411R508.WMF

1. Remove the document table assembly (See Document Table Assembly).
2. Remove the stopper bracket [A] (1 screw).
3. Remove the ADU (See ADU/Paper Transport Motor).
4. Remove the CIS [B] (2 connectors, 1 screw).

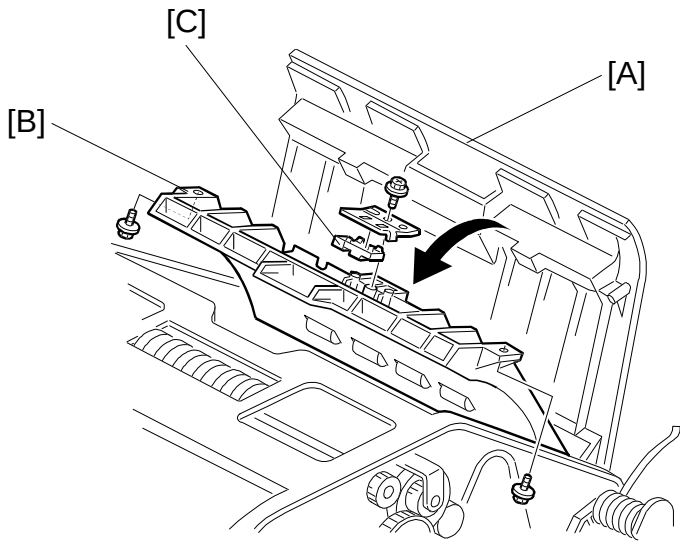
5.2.5 SCANNING GUIDE PLATE



G411R509.WMF

1. Remove the ADF upper, ADF left, and ADF right cover (See ADF Exterior).
2. Remove the scanning guide plate [A] (2 screws).

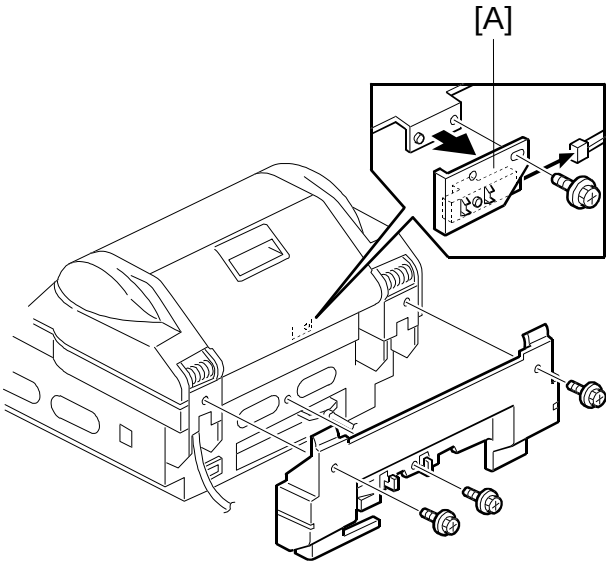
5.2.6 FEED SENSOR



G411R510.WMF

1. Open the ADF cover [A].
2. Remove the feed cover [B] (2 screws).
3. Remove the feed sensor [C] (1 connector, 1 screw).

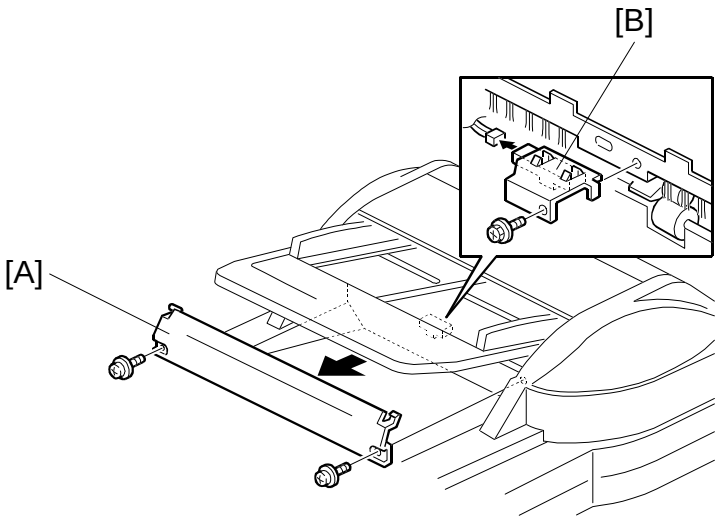
5.2.7 READ SENSOR



G411R511.WMF

1. Remove the rear cover (See Scanner Exterior/Operation Panel).
2. Remove the read sensor [A] (1 connector, 1 screw).

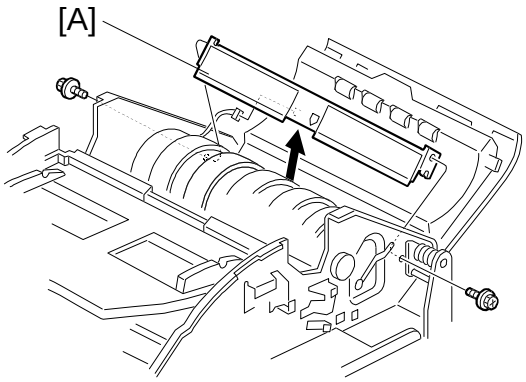
5.2.8 FEED-OUT SENSOR



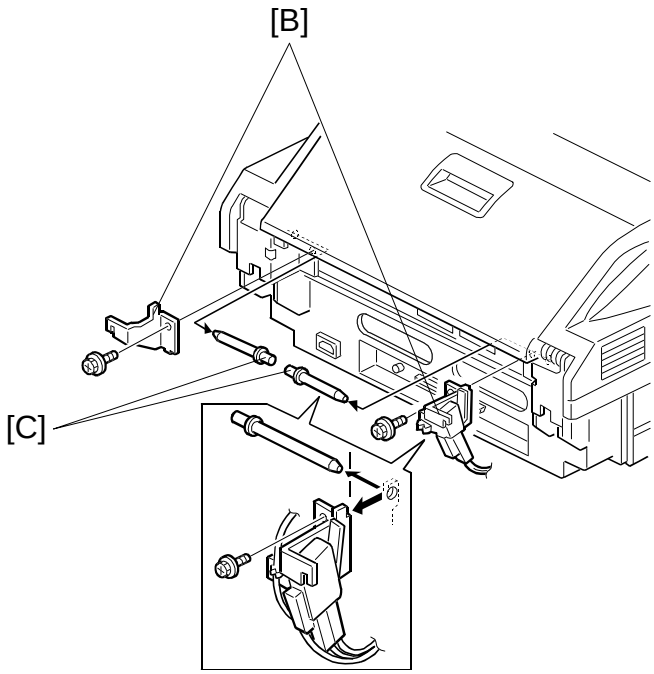
G411R512.WMF

1. Remove the feed-out cover [A] (2 screws).
2. Remove the feed-out sensor [B] (1 connector, 1 screw).

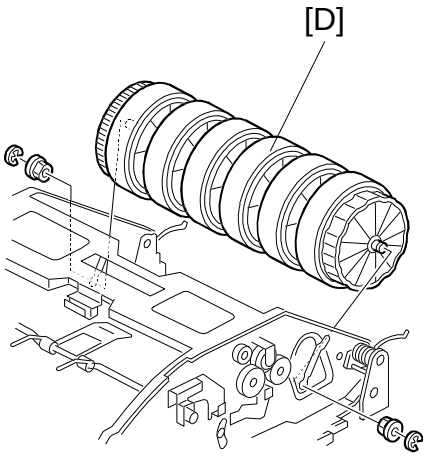
5.2.9 PAPER TRANSPORT DRUM



G411R513.WMF



G411R514.WMF

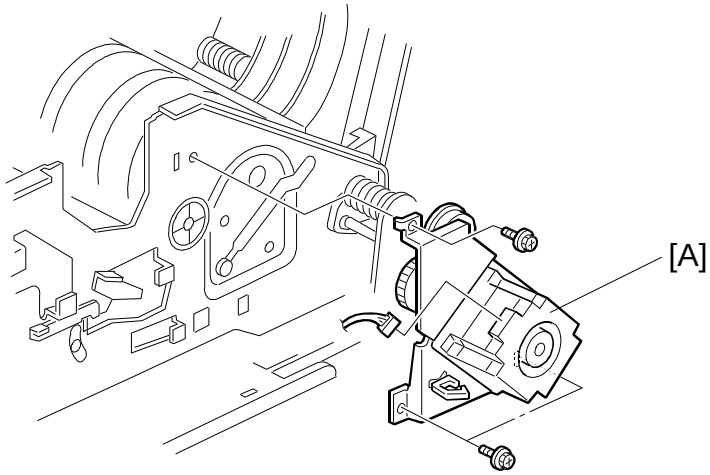


G411R515.WMF

1. Remove the separation unit (see Separation Unit).
2. Remove the paper feed motor (see Paper Feed Motor).
3. Remove the ADU (see ADU/Paper Transport Motor).
4. Remove the paper transport motor (see ADU/Paper Transport Motor).
5. Remove the registration guide plate [A] (1 connector, 2 screws).
6. Remove the rear cover (see Scanner Exterior/Operation Panel).
7. Remove the stopper brackets [B] (1 screw each).
8. Remove the pins [C].
9. Open the ADF cover.
10. Remove the paper transport drum [D] (2 E-rings, 2 bearings).

5.3 ADF AND RIGHT SIDE

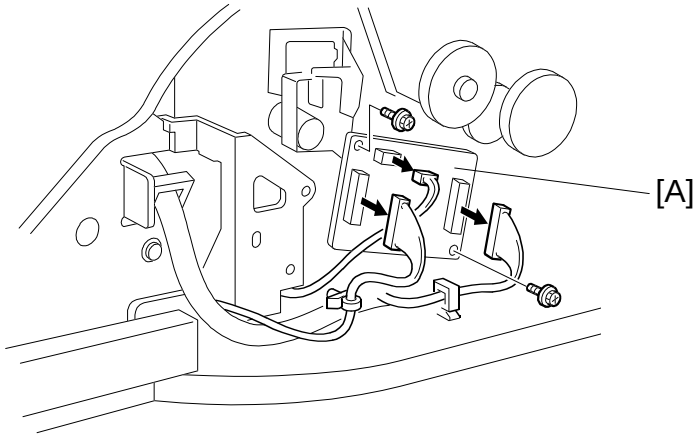
5.3.1 PAPER FEED MOTOR



G411R516.WMF

1. Remove the ADF upper and ADF right cover (see ADF Exterior).
2. Remove the paper feed motor [A] (1 connector, 3 screws).

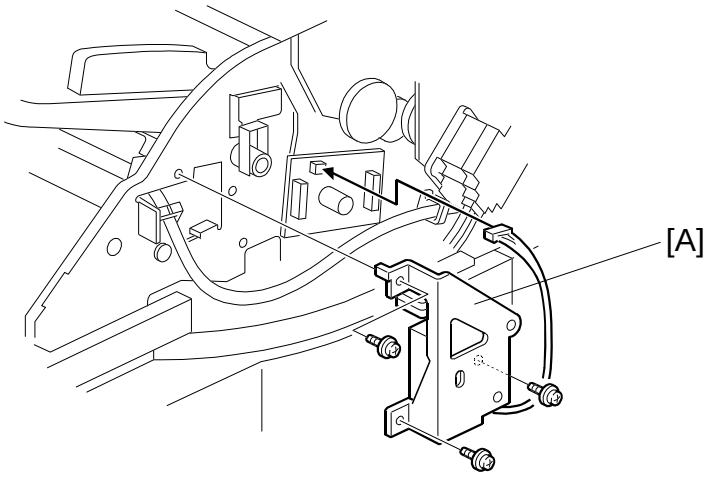
5.3.2 EDU



G411R517.WMF

1. Remove the ADF upper and ADF right cover (see ADF Exterior).
2. Remove the EDU [A] (3 connectors, 2 screws).

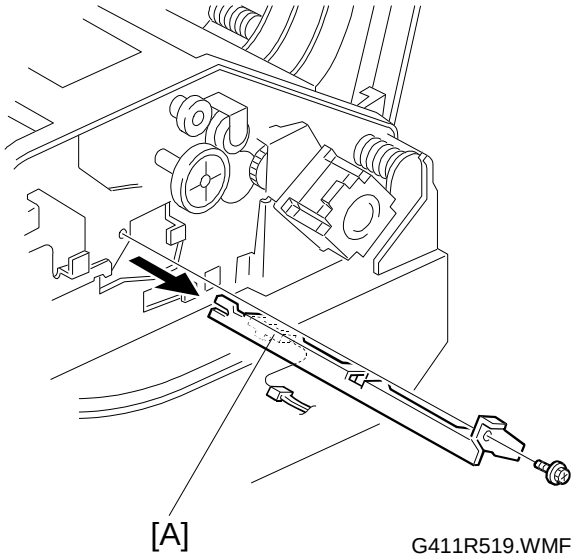
5.3.3 ENDORSER SOLENOID



G411R518.WMF

1. Remove the ADF upper and ADF right cover (see ADF Exterior).
2. Remove the endorser solenoid [A] (1 connector, 3 screws).

5.3.4 RELAY SENSOR

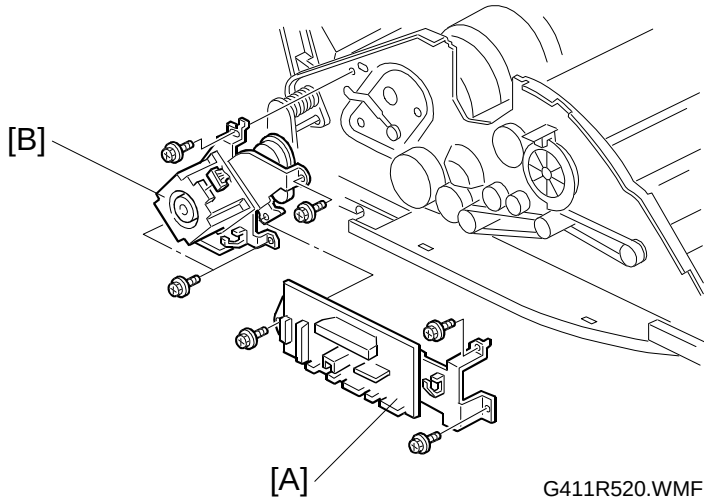


G411R519.WMF

1. Remove the ADF upper and ADF right cover (see ADF Exterior).
2. Remove the relay sensor [A] (1 connector, 1 screw).

5.4 ADF AND LEFT SIDE

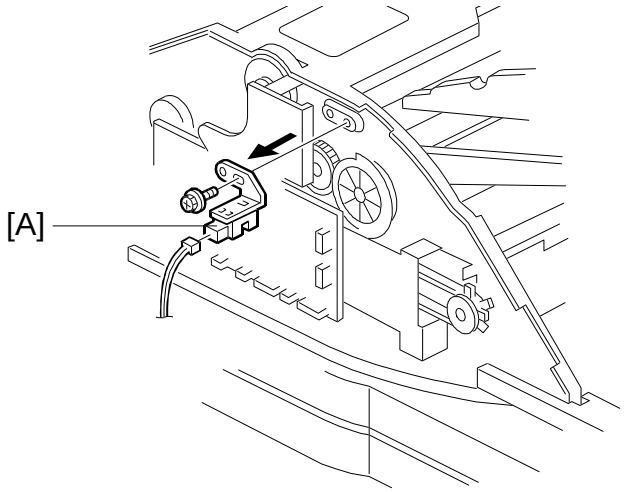
5.4.1 ADU/PAPER TRANSPORT MOTOR



G411R520.WMF

1. Remove the ADF upper and ADF left cover (see ADF Exterior).
2. Remove the ADU [A] (10 connectors, 3 screws).
3. Remove the paper transport motor [B] (1 connector, 3 screws).

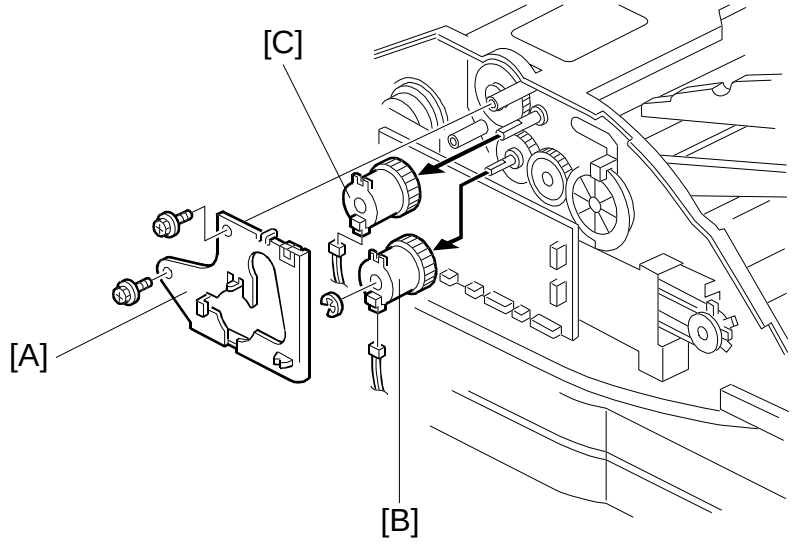
5.4.2 DOCUMENT TABLE POSITION SENSOR



G411R521.WMF

1. Remove the ADF upper and ADF left cover (see ADF Exterior).
2. Remove the document table position sensor [A] (1 connector, 1 screw).

5.4.3 PICK-UP CLUTCH/DOCUMENT TABLE LIFT CLUTCH

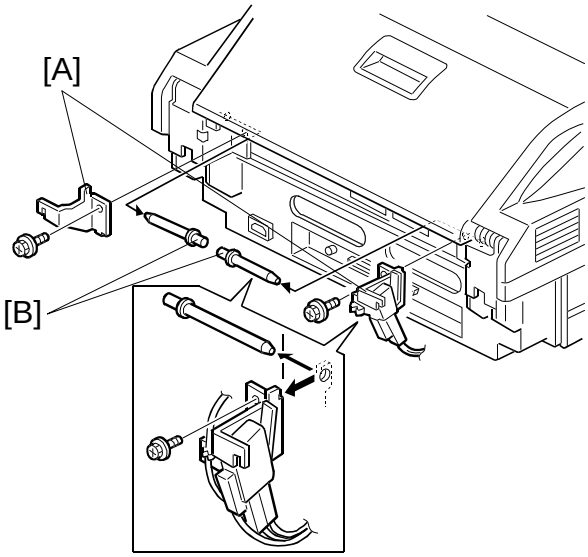


G411R522.WMF

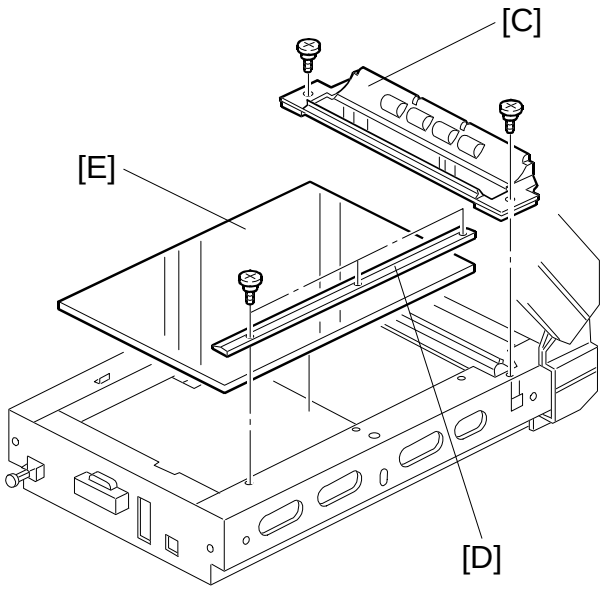
1. Remove the ADF upper and ADF left cover (see ADF Exterior).
2. Remove the stopper bracket [A] (2 screws).
3. Remove the pick-up clutch [B] (1 connector).
4. Remove the document table lift clutch [C] (1 connector, 1 E-ring).

5.5 SCANNER

5.5.1 EXPOSURE GLASS



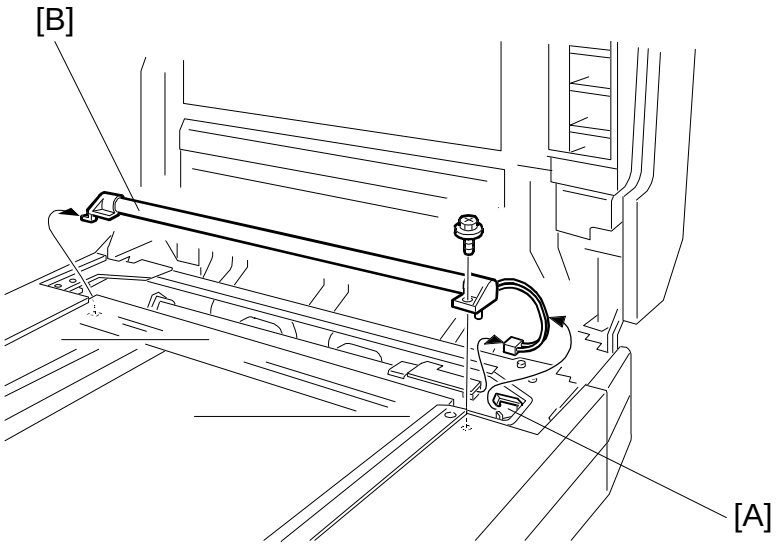
G411R514.WMF



G411R523.WMF

1. Remove the rear cover (See Scanner Exterior/Operation Panel).
2. Remove the stopper brackets [A] (2 screws).
3. Remove the pins [B].
4. Open the platen cover vertically.
5. Remove the lamp cover [C] (2 screws).
6. Remove the scale [D] (3 screws).
7. Remove the exposure glass [E].

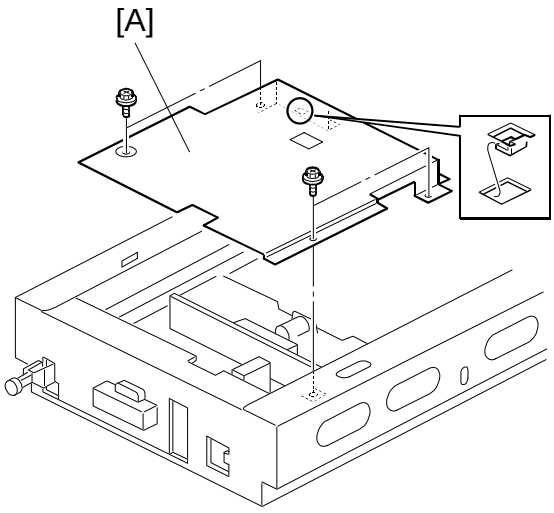
5.5.2 EXPOSURE LAMP



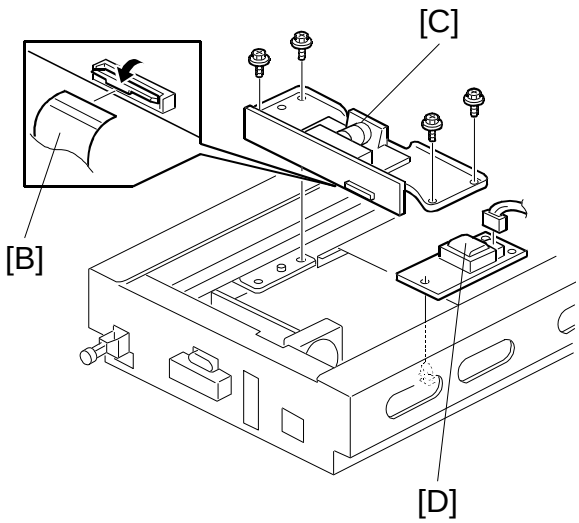
G411R524.WMF

1. Remove the exposure glass (see Exposure Glass).
2. Slide the 1st scanner to the cutout [A] in the right frame.
3. Remove the exposure lamp [B] (1 connector, 1 screw).

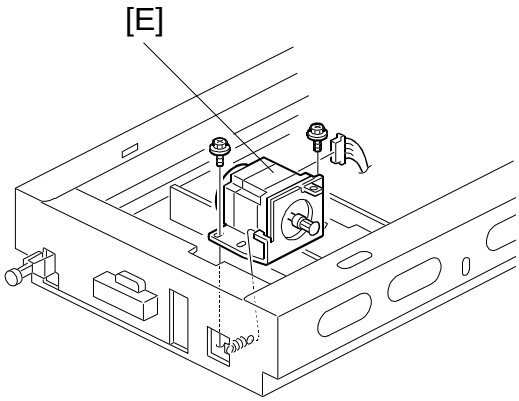
5.5.3 SBU/LAMP STABILIZER/SCANNER MOTOR/PSU



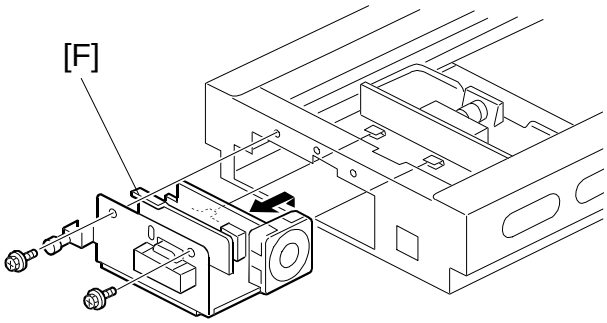
G411R525.WMF



G411R526.WMF



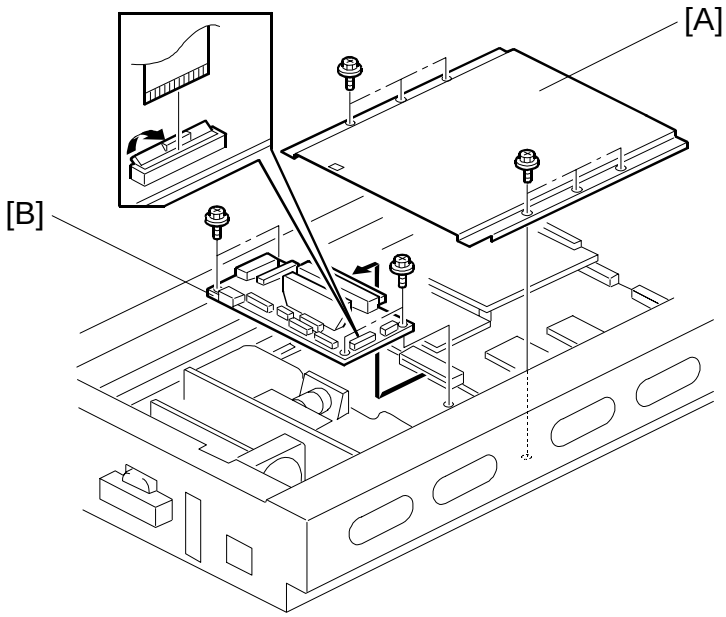
G411R527.WMF



G411R528.WMF

1. Remove the exposure glass (see Exposure Glass).
2. Remove the lens cover [A] (4 screws).
3. Disconnect the flexible cable [B]
4. Remove the SBU [C] (4 screws).
5. Remove the lamp stabilizer [D] (2 connectors).
6. Remove the operation panel (see Scanner Exterior/Operation Panel).
7. Remove the front cover (see Scanner Exterior/Operation Panel).
8. Remove the scanner motor [E] (1 spring, 1 connector, 2 screws).
9. Remove the PSU [F] (5 connectors, 2 screws).

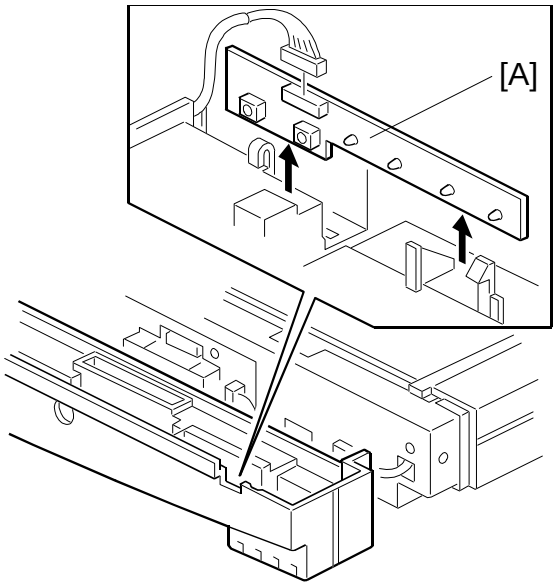
5.5.4 IOB



G411R529.WMF

1. Remove the exposure glass (see Exposure Glass).
2. Remove the lens cover (see SBU/Lamp Stabilizer/Scanner Motor/PSU).
3. Remove the PCB cover [A] (6 screws).
4. Remove the IOB [B] (5 connectors, 4 screws).

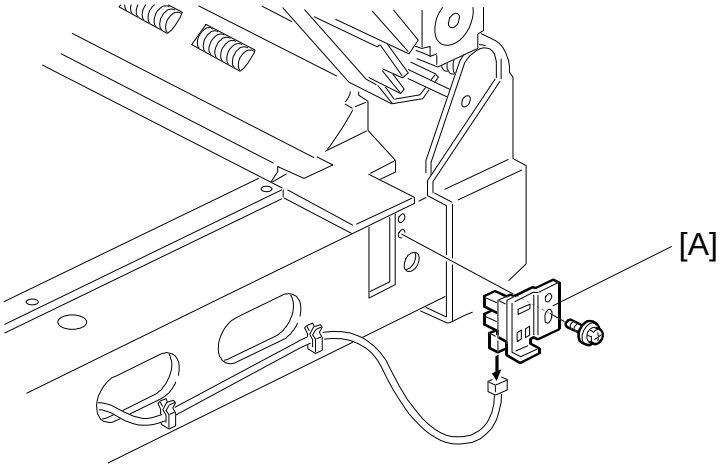
5.5.5 SOP



G411R538.WMF

1. Remove the operation panel and the front cover (see Scanner Exterior/Operation Panel).
2. Remove the SOP (1 connector).

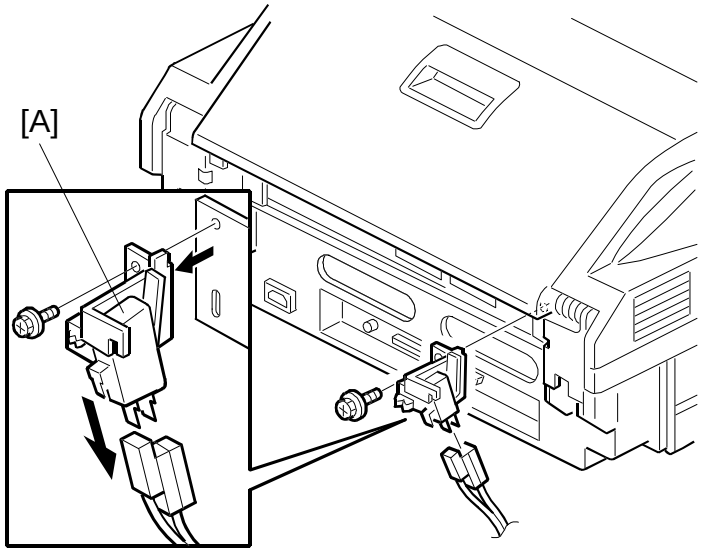
5.5.6 HOME POSITION SENSOR



G411R530.WMF

1. Remove the right cover (see Scanner Exterior/Operation Panel).
2. Remove the home position sensor [A] (1 connector, 1 screw).

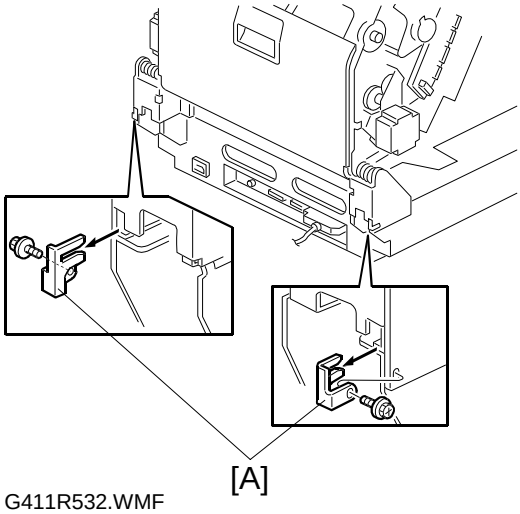
5.5.7 ADF INTERLOCK SWITCH



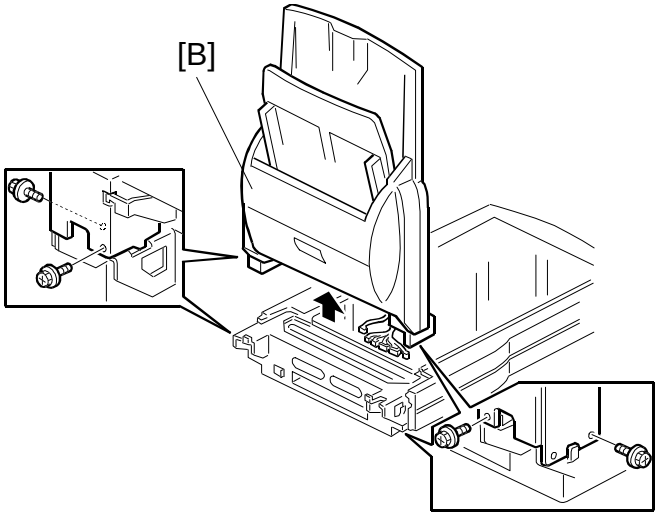
G411R531.WMF

1. Remove the rear cover (see Scanner Exterior/Operation Panel).
2. Remove the ADF interlock switch [A] (1 connector, 1 screw).

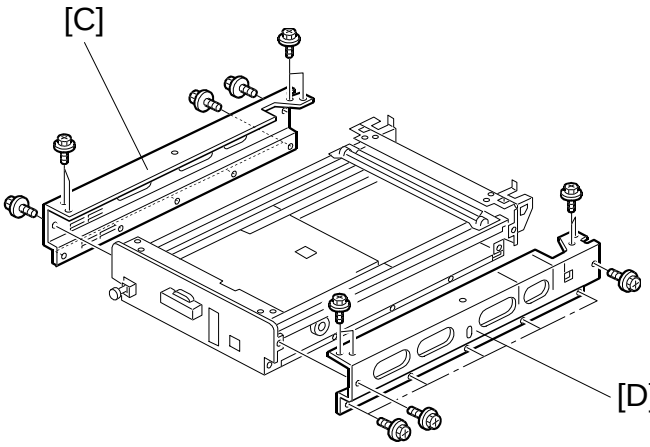
5.5.8 SCANNER WIRE



G411R532.WMF

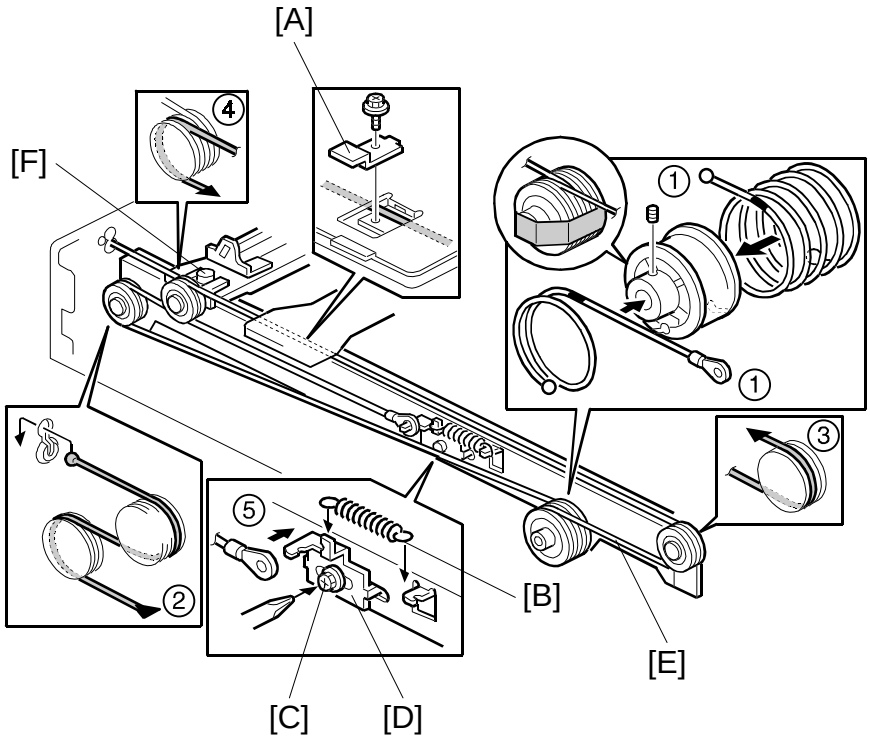


G411R533.WMF



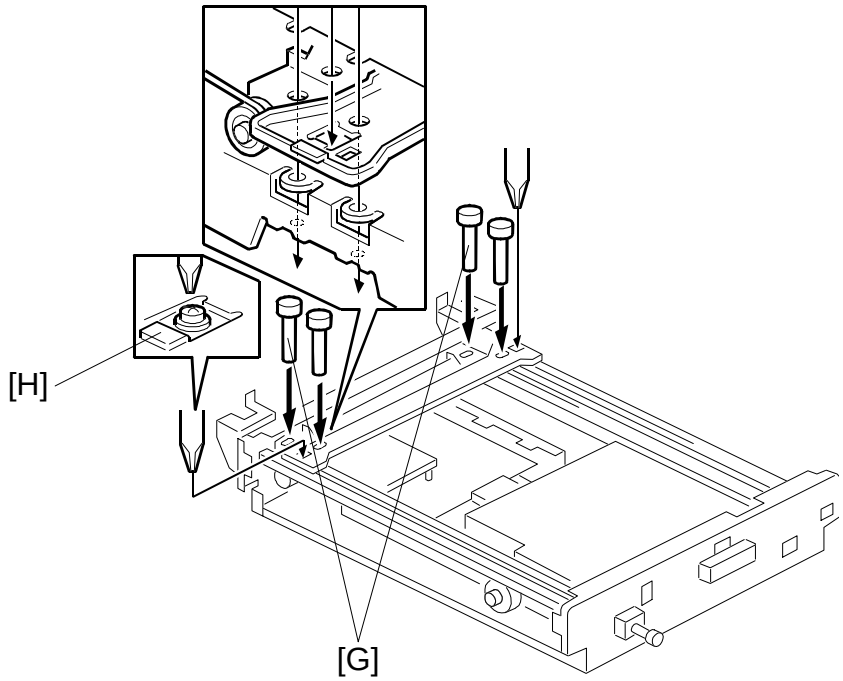
G411R534.WMF

1. Remove the exposure glass (see Exposure Glass).
2. Remove the stopper brackets [A] (1 screw each).
3. Remove the ADF [B] (4 connectors, 4 screws).
4. Remove the operation panel, front cover, right cover, and left cover (see Scanner Exterior/Operation Panel).
5. Remove the left frame [C] (11 screws).
6. Remove the right frame [D] (11 screws).



G411R536.WMF

7. Remove the right and left scanner wire brackets [A] (1 screw each). Then, remove the 1st scanner.
8. Remove the tension spring [B].
9. Loosen the screw [C] securing the wire tension bracket [D].
10. Remove the scanner wire [E].
11. Secure the 2nd scanner with the scanner positioning tools (P/N A0069104) [F].
12. Wind the new scanner wire around the scanner drive pulley in the correct direction, as shown (①).
13. Wind the end of the new wire with the ball as shown (②).
14. Wind the end of the new wire with the ring as shown (③, ④ and ⑤).
15. Wind the new scanner wire for the other side as well.
16. Install the tension spring [B] on the wire tension bracket [D].
17. Tighten the wire tension bracket [D].

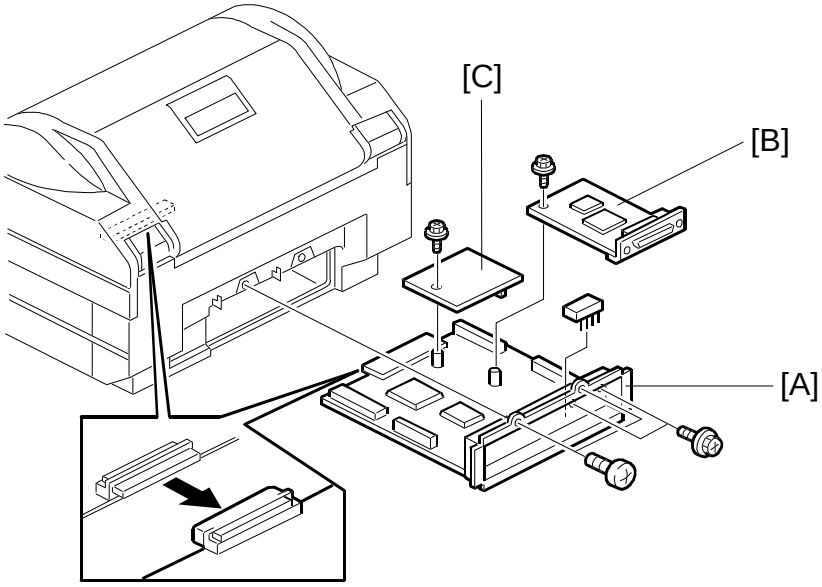


G411R535.WMF

18. Install the 1st scanner and adjust its position with the scanner positioning tools (P/N A0069104) [G].
19. Secure the 1st scanner with the scanner wire bracket [H] (1 screw each).
20. Remove the positioning tools. After sliding the scanner to the front and back several times, set the positioning tools to check the scanner wire bracket and tension bracket again.
21. Reassemble the scanner.

5.6 PCB

5.6.1 SCU/RCU/IPU



G411R537.WMF

1. Remove the SCU assembly [A] (2 screws).
2. Remove the RCU [B] (3 screws).
3. Remove the IPU [C] (1 screw).

NOTE: When replacing the SCU, put the old ROM (IC31) on the new SCU.

6. TROUBLESHOOTING

6.1 SELF-DIAGNOSTICS

The scanner automatically performs a series of self-diagnostic checks each time the power is turned on. If an error is detected, it is displays the type of error using the four LEDs on the scanner. See “Detailed Section Descriptions - Initialization” for more details of the initialization procedure.

6.2 CHECK ITEMS

6.2.1 ITEMS CHECKED DURING INITIALIZATION

The self-diagnostics check the following items at power-up.

1) The ADF or ADF cover is not closed properly.
2) An original is jammed in the ADF.
3) There is a problem with the operation of the document table.
4) Memory error (system error)
   Does the memory in the scanner work properly?
5) Home position error (system error)
   Have the scanners reached home position properly?
6) Exposure lamp error (system error)
   Is the standard white level detected properly?

NOTE:
- If an error is detected for any of items 4) to 6), “System Error” is indicated, and the details can be checked with the self-diagnostics (see section 6-3).
- Even if an error is detected for item 2), scanning can start in book mode.

6.3 ERROR INDICATION

If the self-diagnostics find an error, the error is displayed by a combination of the four LEDs on the scanner. If the dip switches on the rear of the machine are set up for normal operation, the error is indicated roughly for users. When the dip switches are set to the self-diagnostic mode position, the system error is indicated in detail for technicians.

6.3.1 USER LEVEL ERROR INDICATION

Conditions	Contents	Originals on the table	LEDs			
			Green	Green	Green	Red
Machine Initialization	Overall machine check		On	On	On	On
Demonstration Mode			On	On	On	On
Stand-by	Normal mode	No	On	Off	Off	Off
		Yes	On	Off	On	Off
	Scan wait mode	No	On	Off	Blinking	Off
		Yes	On	Off	Blinking	Off
Scanning	Normal mode	No	On	On	Off	Off
		Yes	On	On	On	Off
User-visible Error Conditions	ADF cover switch open		On	Off	Off	On
	Document jam		On	Off	Blinking	On
	Document misfeed		On	Off	On	On
	Document table error		On	Off	Blinking	Blinking
	Endorser error		Blinking	Blinking	On	Off
System Error			Blinking	Blinking	Blinking	Blinking

On: LED on Blinking: LED blinking Off: LED off

6.3.2 TECHNICIAN LEVEL ERROR INDICATION

Error Items	LEDs			
	Green	Green	Green	Red
Memory error (Simplex)	Blinking	Off	Off	Off
Memory error (Duplex)	Off	Blinking	Off	Off
Exposure lamp failure	Blinking	Blinking	On	On
CIS error	Blinking	Blinking	On	Blinking
White level error	Blinking	Blinking	Off	Off
Home position error	Blinking	Blinking	Blinking	On
SCU error	Blinking	Off	Off	Blinking
RCU error	Blinking	Off	On	Blinking
Optional IPU error	Blinking	On	Off	Blinking

On: LED on Blinking: LED blinking Off: LED off

6.4 TROUBLESHOOTING PROCEDURES

There are two types of troubleshooting procedure.

- For user-visible error conditions that the user could not clear up
- For technician level error conditions

6.4.1 USER-VISIBLE ERROR CONDITIONS

ADF Interlock Switch Open

Symptom:

The problem cannot be solved with the procedures in the user's manual.

Possible Causes:

- Defective ADF interlock switch
- Damaged cable between the ADF interlock switch and the PSU

Procedure:

Does 24 volts come to the ADF cover interlock switch?
Yes No
Is the cable damaged?
Yes No
Replace the PSU.
Replace the cable.
Replace the ADF interlock switch.

Document Jam

Symptom:

The problem cannot be solved with the procedures in the user's manual.

Possible Causes:

- Damaged separation unit
- Damaged paper transport drum assy
- Damaged paper feed-out unit
- Defective paper transport motor or paper feed motor
- Defective read sensor or feed-out sensor
- Defective SCU, IOB or ADU

Procedure:

First of all, check the sensors with demonstration and sensor check mode. See Service Level Functions – Dip Switch Settings.

Are all the sensors OK?
Yes No
Is the cable damaged?
Yes No
Replace the sensor.
Replace the cable.
Does the jam always happen at the same position?
Yes No
Are the 24-volt lines from the PSU to the IOB (24VADU) or from the IOB to the ADF OK?
Yes No
Is the cable damaged?
Yes No
Replace the PSU.
Replace the cable.
Is the 24-volt line from the ADU to the paper transport motor OK?
Yes No
Is the cable damaged?
Yes No
Replace the ADU.
Replace the cable.
Replace the paper transport motor.

NOTE: If the feed motor is defective, a "Document Table Error" is generated.

Did the jam occur at the paper transport drum assy?
Yes No
Replace the paper feed-out assy.
Replace the paper transport drum assy.

Paper Misfeed

Symptom:

The problem cannot be solved with the procedures in the user's manual.

Possible Causes:

- Damaged separation unit
- Defective pick-up clutch
- Defective ADU
- Defective SCU
- Defective feed sensor

Procedure:

Does the pick-up roller mechanism work?
Yes No
Is 24 volts supplied to the pick-up clutch?
Yes No
Is the cable damaged?
Yes No
Replace the ADU.
Replace the cable.
Is there an open circuit in the clutch?
Yes No
Replace the SCU.
Replace the pick-up clutch.
Does the jam happen at the separation unit?
Yes No
Replace the pick-up roller.
Replace the separation unit.

Document Table Error

Symptom:

The problem cannot be solved with the procedures in the user's manual.

Possible Causes:

- Defective document table position sensor
- Defective document table clutch
- Defective paper feed motor
- Defective ADU
- Defective SCU
- Damaged document table

Procedure:

Is the document table itself OK?
Yes — No
Replace it.
Does the table work (up/down operation)?
Yes — No
Does the separation roller mechanism work?
Yes — No
Does 24 volts come to the paper feed motor?
Yes — No
Is the cable damaged?
Yes — No
Replace the ADU.
If the 24 volts from the PSU is defective, another error will be generated.
Replace the cable.
Replace the motor, if it has a defective.
Does the document table lift clutch work.
Yes — No
Does 24 volts come to the document table lift clutch?
Yes — No
Is the cable damaged?
Yes — No
Replace the ADU
Replace the cable.
Replace the document table lift clutch
Check the table lift mechanism.
Replace the SCU.

NOTE: If the 5-volt line is defective, the ADF LEDs will not work, so the error type will not be visible. Therefore it can be assumed that there is a problem with a timing signal. All timing signals are generated in the SCU and the problem can be fixed by replacing the SCU.

Endorser Error

Symptom:

The problem cannot be solved with the procedures in the user's manual.

Possible Causes:

- Defective endorser unit
- Defective EDU

Procedure:

Is the endorser unit is broken?
Yes No
Is the cable between the EDU and the endorser unit or the ADU and the EDU OK?
Yes No
Replace the cable.
Replace the EDU.
Replace the endorser unit.

6.4.2 SERVICE CALL ERRORS (SYSTEM ERRORS)

If a system error occurs, the following errors can be detected with the self-diagnostics using the dip switches. See Service Level Functions – Dip Switch Settings.

Memory Error

Symptom:

This error occurs in the following conditions.

- SRAM read/write error
- DRAM read/write error
- Memory over run error

Possible Cause:

- Defective SCU

Procedure:

Replace the SCU.

Lamp Error

Symptom:

The white level cannot be adjusted.

Possible Cause:

- A mirror is out of position.
- Misalignment
- Defective SBU
- Defective IOB
- Defective SCU

Procedure:

Does the exposure lamp light during scanning?
Yes No
Does 24 volts come to the lamp stabilizer?
Yes No
Is the cable damaged?
Yes No
Replace the PSU.
Replace the cable.
Replace the exposure lamp
Does the exposure lamp light?
Yes No
Replace the lamp stabilizer.
Go to the next step.
Are all mirrors installed properly?
Yes No
Reseat any mirrors that are out of place.
Does the SBU generate the correct signals?
Yes No
Replace the SBU.
Replace the SCU. If that does not work, try changing the IOB.

Document Table Error

Same as for the user-visible error condition. See section 6-4-1.

CIS Error (duplex model only)

Symptom:

The white level of the reverse side scanning cannot be adjusted.

Possible Cause:

- Defective CIS unit
- Defective ADU
- Defective RCU
- Defective SCU

Procedure:

Does the LED array light?
YES No
Does 15 volts come to the CIS unit?
Yes No
Is the cable damaged?
Yes No
Replace the ADU.
Replace the cable.
Replace the CIS unit.
Does the CIS generate the correct signals?
Yes No
Replace the CIS unit.
Does the RCU generate the correct signals?
Yes No
Replace the RCU.
Replace the SCU.

Shading Error

Symptoms:

A shading error occurs when one of the following conditions occurs.

- The difference in black level cannot be adjusted.
- The black level cannot be adjusted.
- The white level cannot be adjusted.

Possible Causes:

- A mirror is out of position.
- Misalignment
- Defective SCU
- Defective SBU
- Defective exposure lamp
- Dirty white plate

Procedure:

Is there any problem with the exposure lamp?
Yes No
Is the white plate dirty?
Yes No
Are all the mirrors installed properly?
Yes No
Reseat the mirror.
Does the SBU generate the correct signals?
Yes No
Replace the optical unit.
Replace the SCU.
Replace the ADF exposure cover.
Replace the exposure lamp.

NOTE: The read signal goes to the SCU through the IOB, but the IOB does not do any image processing. Therefore the IOB probably does not have a problem. However, if the problem is not solved even after replacing the SCU, try changing the IOB.

Home Position Error

Symptom:

This error is detected when the home position sensor cannot detect the first scanner.

Possible Causes:

- Defective scanner motor
- Damaged cable between the scanner motor and the IOB
- Defective IOB
- Defective home position sensor
- Damaged cable between the home position sensor and the IOB

Procedure:

Does the home position sensor work? Check it with sensor test mode. (See See Service Level Functions – Dip Switch Settings.)
Yes No
Does 5 volts reach the sensor?
Yes No
Is the cable between the home position sensor and the IOB OK?
Yes No
Replace the cable.
Replace the PSU.
Replace the sensor.
Is the drive wire OK?
Yes No
Replace it.
Does 24 volts reach the scanner motor?
Yes No
Is the cable between the motor and the IOB damaged?
Yes No
Replace the IOB.
Replace the cable.
Replace the scanner motor.

SCU Error

Symptom:

3.3 volts generated on the SCU failed during scanning.

Possible Cause:

- Defective SCU

Procedure:

Replace the SCU.

RCU Error

Symptom:

3.3 volts generated on the RCU failed during scanning.

Possible Cause:

- Defective RCU

Procedure:

Replace the RCU.

Optional IPU Error

Symptom:

3.3 volts generated on the optional IPU board failed during scanning.

Possible Cause:

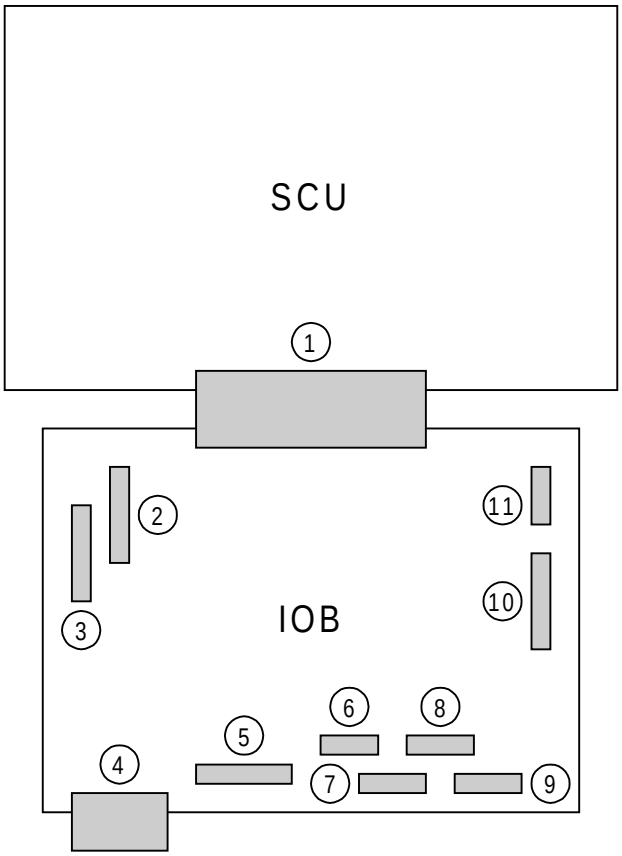
- Defective optional IPU board

Procedure:

Replace the optional IPU board.

6.5 INDICATION WHEN A CONNECTOR IS OUT OF POSITION

6.5.1 SCANNER



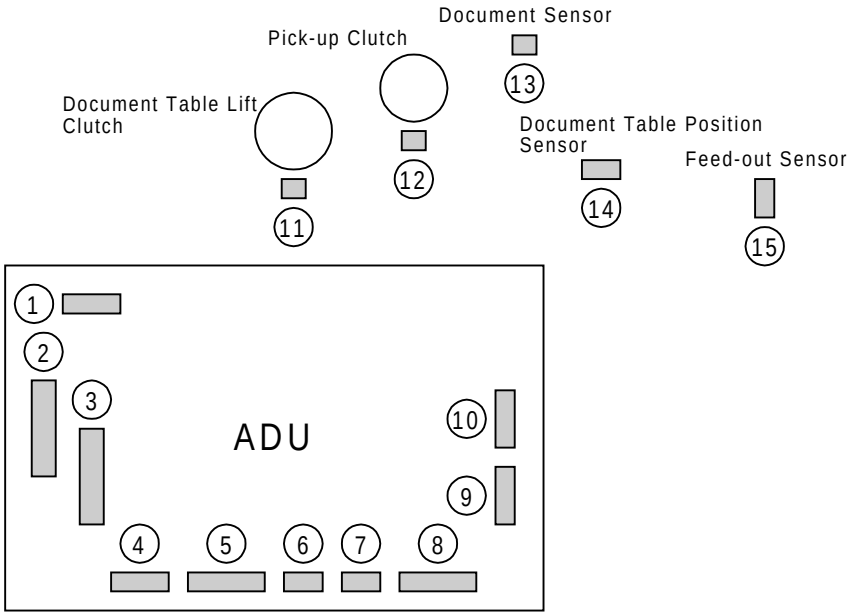
G411T500.WMF

Connector	Scanner LEDs				Remarks
	Green	Green	Green	Red	
1 (CN201)	—	—	—	—	
2 (CN203)	On	Off	On	Off	
3 (CN204)	On	Off	Blinking	Blinking	Document table error
4 (CN210)	Blinking	Blinking	Blinking	Blinking	System error
5 (CN209)	—	—	—	—	
6 (CN211)	On	Off	Off	On	ADF interlock switch open
7 (CN208)	—	—	—	—	
8 (CN206)	Blinking	Blinking	Blinking	Blinking	System error
9	Not used	Not used	Not used	Not used	
10 (CN202)	Blinking	Blinking	Blinking	Blinking	System error
11 (CN205)	Blinking	Blinking	Blinking	Blinking	System error

On: LED on Off: LED off Blinking: LED blinking

—: When the machine is switched on, all LEDs should light briefly. However, "—" in these tables indicates that the LED does not light up briefly at power-up.

6.5.2 ADF



G411T501.WMF

Connector	Scanner LEDs				Remarks
	Green	Green	Green	Red	
1 (CN303)	On	Off	Off	Off	
2 (CN302)	On	Off	Blinking	Blinking	Document table error
3 (CN301)	On	Off	On	Off	
4 (CN306)	On	Off	Off	Off	
5 (CN305)	On	Off	Off	Off	
6 (CN307)	On	Off	Blinking	Blinking	Document table error
7 (CN310)	On	Off	Off	Off	
8 (CN308)	On	Off	Off	Off	
9 (CN309)	On	Off	Off	Off	
10 (CN304)	On	Off	Blinking	Blinking	Document table error
11	On	Off	Blinking	Blinking	Document table error
12	On	Off	Off	Off	
13	On	Off	On	Off	
14	On	Off	Blinking	Blinking	Document table error
15	On	Off	Off	Off	

On: LED on Off: LED off Blinking: LED blinking

—: When the machine is switched on, all LEDs should light briefly. However, "—" in these tables indicates that the LED does not light up briefly at power-up.

6.6 BLOWN FUSE CODITIONS

Fuse	Rating		Symptom when turning on the main switch
	115 V	**220 ~ 240 V**	
Power Supply Unit			
FU1	5 A/125 V	3.15 A/250 V	No response.
FU31	4 A/125 V		Exposure lamp error Home position error White level error
FU32	4 A/125 V		Document table working error Document jam
FU33	5 A/125 V		No response.
FU35	5 A/125 V		Exposure lamp error RCU error
ADU (Duplex Model)			
FU101	1.25 A/250 V		CIS error
EDU			
FU401	3.15 A/250 V		Endorser error Endorser does not work.
Lamp Stabilizer			
FU1	1 A/60 V		Exposure lamp error

7. OPTION

7.1 IPU (IMAGE PROCESSING UNIT)

7.1.1 OVERVIEW

The IPU does the following.

Dynamic Threshold

This function automatically determines a suitable threshold value based on the original, and converts the scanned image to binary data.

Auto Photo/Letter

This function automatically identifies the text portions of an original and the photographic portions, and scans each in a suitable scan mode.

Document Size Detection

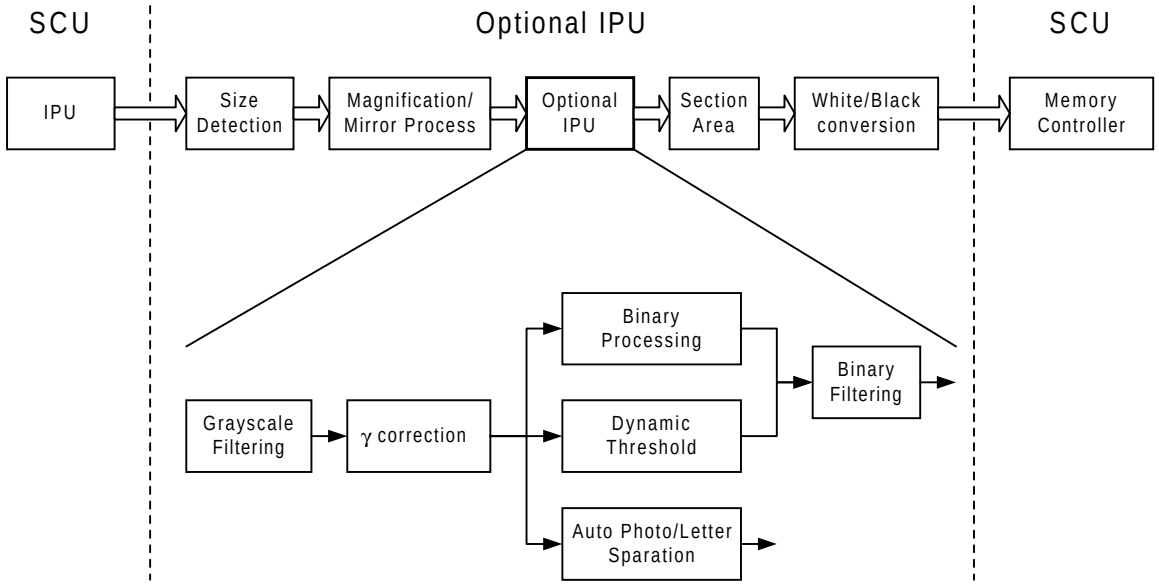
This function automatically detects the width of an original, and sends the information to the host computer.

Section Area

This function selects an area within an original and sets scanning conditions for that area.

7.2 IMAGE PROCESSING PATH

The following image processing is for the scanner with the optional IPU.



G411O500.WMF

Dynamic Threshold

A suitable threshold value is determined based on the original.

Auto Photo/Letter Separation

Generally, text areas have strong contrast between the image and the background. In photo areas, mid-range gray areas are common. By using these characteristics, the original image is separated into text and photo areas.

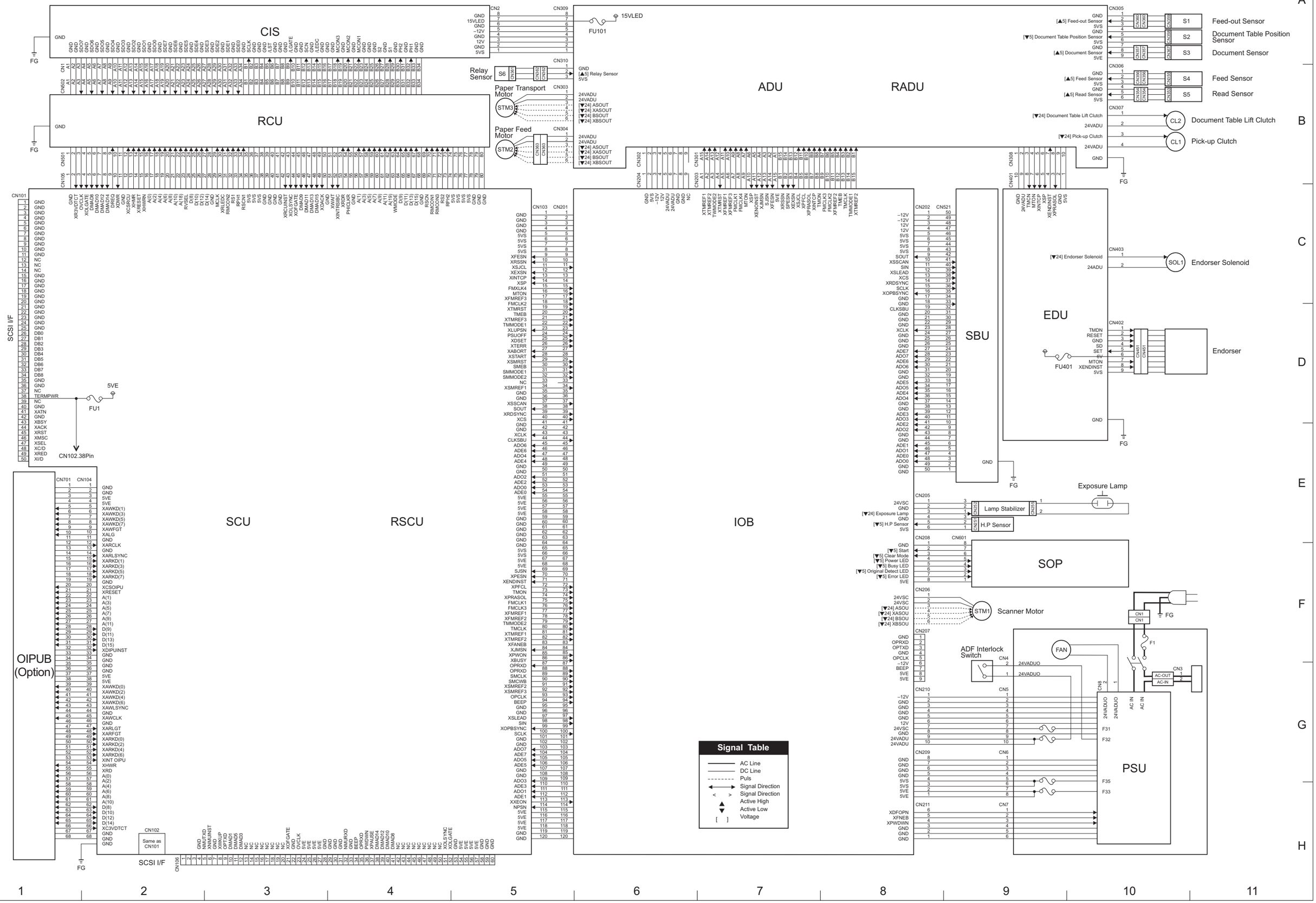
Section Area

The original image is separated into specified areas. Each area is processed using the specified scanning mode.

Size Detection

See Detailed Section Descriptions – Scanner Processes.

HS2P (G407/G408/G410/G411) Point to Point Diagram



HS2P SCANNER
(G407/G408/G410/G411)
PARTS CATALOG

First Edition December 1998

HS2P SCANNER
(G407/G408/G410/G411)

PARTS CATALOG

INTRODUCTION

This chapter instructs you the numbers and names of parts on this machine.

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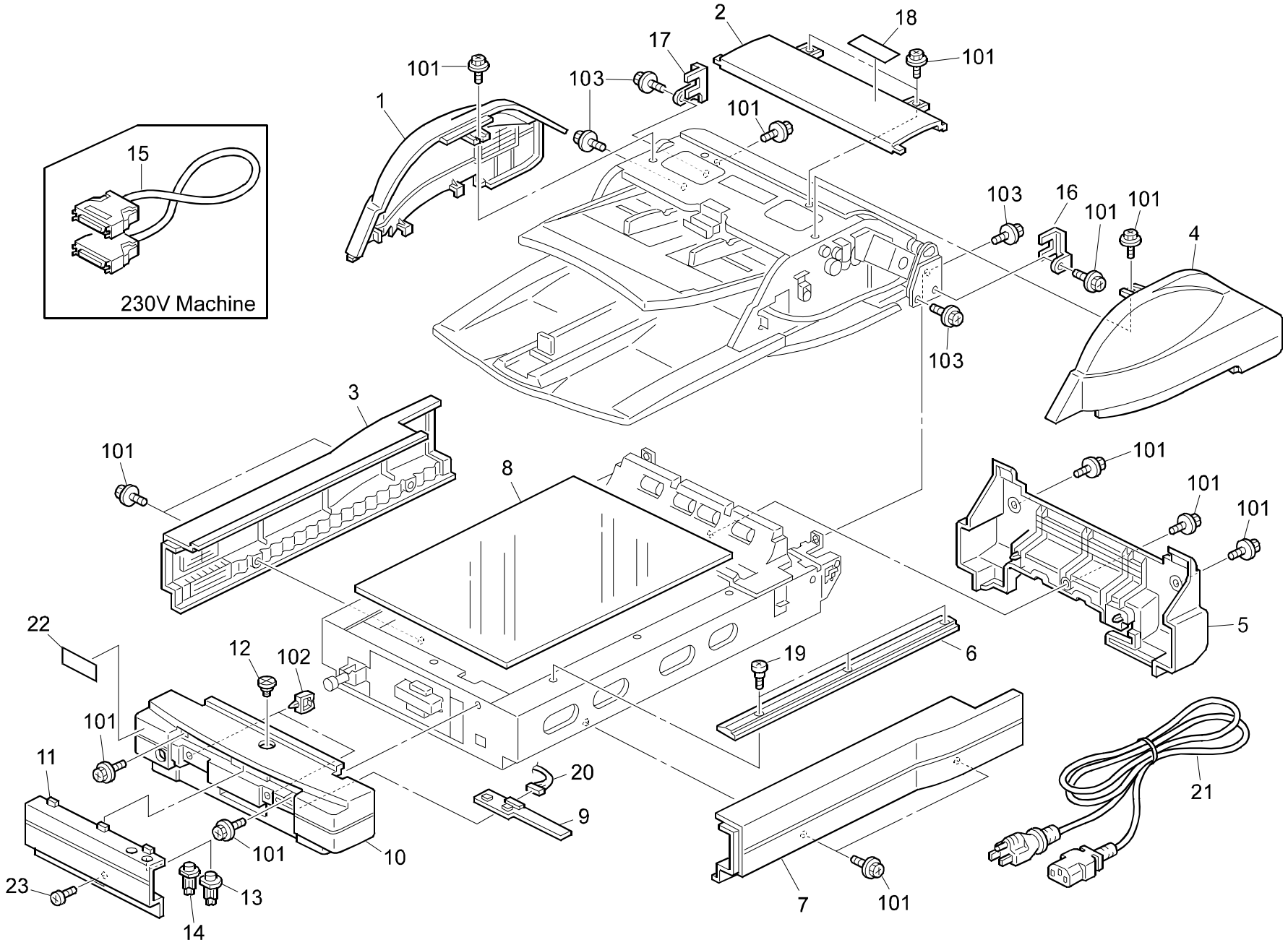
December, 24’98

1.EXTERIOR (G407/G408/G410/G411)

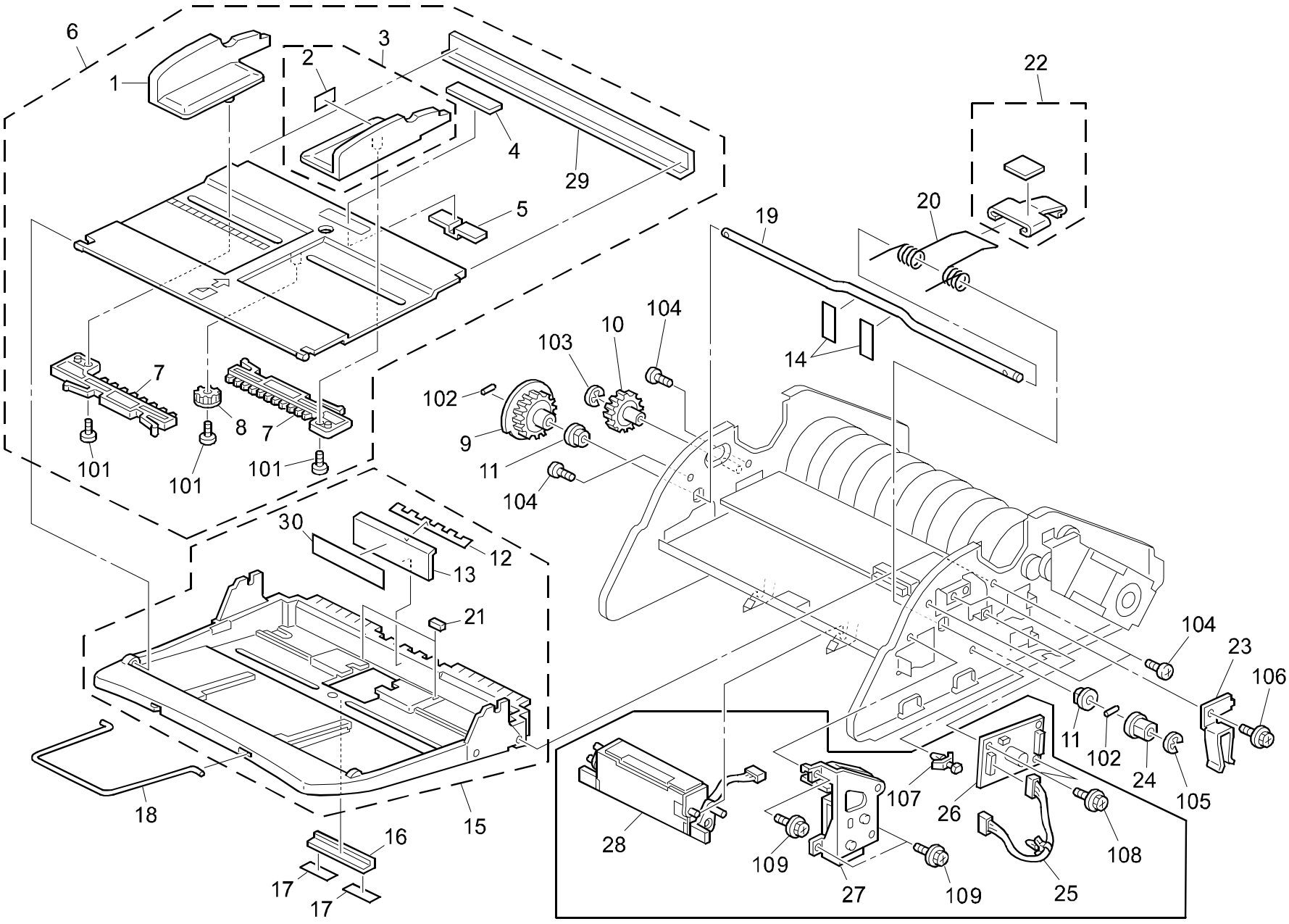


1.EXTERIOR (G407/G408/G410/G411)

Index No.	Part No.	Description	Q'ty Per Assembly
1	G407 4011	ADF Left Cover	1
2	G407 4018	ADF Upper Cover	1
3	G407 1516	Left Cover	1
4	G407 4016	ADF Right Cover	1
5	G407 1521	Rear Cover	1
6	G407 1130	Right Scale	1
7	G407 1511	Right Cover	1
8	AC01 2064	Exposure Glass	1
9	G407 5200	SOP Board	1
10	G407 1553	SUB Front Cover	1
11	G407 1546	Front Cover	1
12	AA14 3761	Cover Screw	2
13	G407 1547	Key-top Start	1
14	G407 1548	Key-top Stop	1
15	G407 5455	SCSI Cable - 1.5m (230V)	1
16	G407 3434	Left Stopper	1
17	G407 3433	Right Stopper	1
18	G407 4027	Decal - Original Remuval	1
19	A193 1759	Stepped Screw	3
20	G407 5380	SOP Operation Harness	1
21	1150 0352	Power Supply Cord (230V)	1
21	5490 5212	Power Cord - UI/CSA 2M (115V)	1
22	G407 1580	Decal Model Name (G407)	1
22	G408 1580	Decal Model Name (G408)	1
22	G410 1580	Decal Model Name (G410)	1
22	G411 1580	Decal Model Name (G411)	1
23	C218 3051	Philips Screw - M3	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0451 3008H	Tapping Screw - 3x8	
102	1105 0229	Clamp	
103	0451 4008B	Philips Tapping Screw - M4x8	

2.ORIGINAL FEED TABLE (G407/G408/G410/G411)



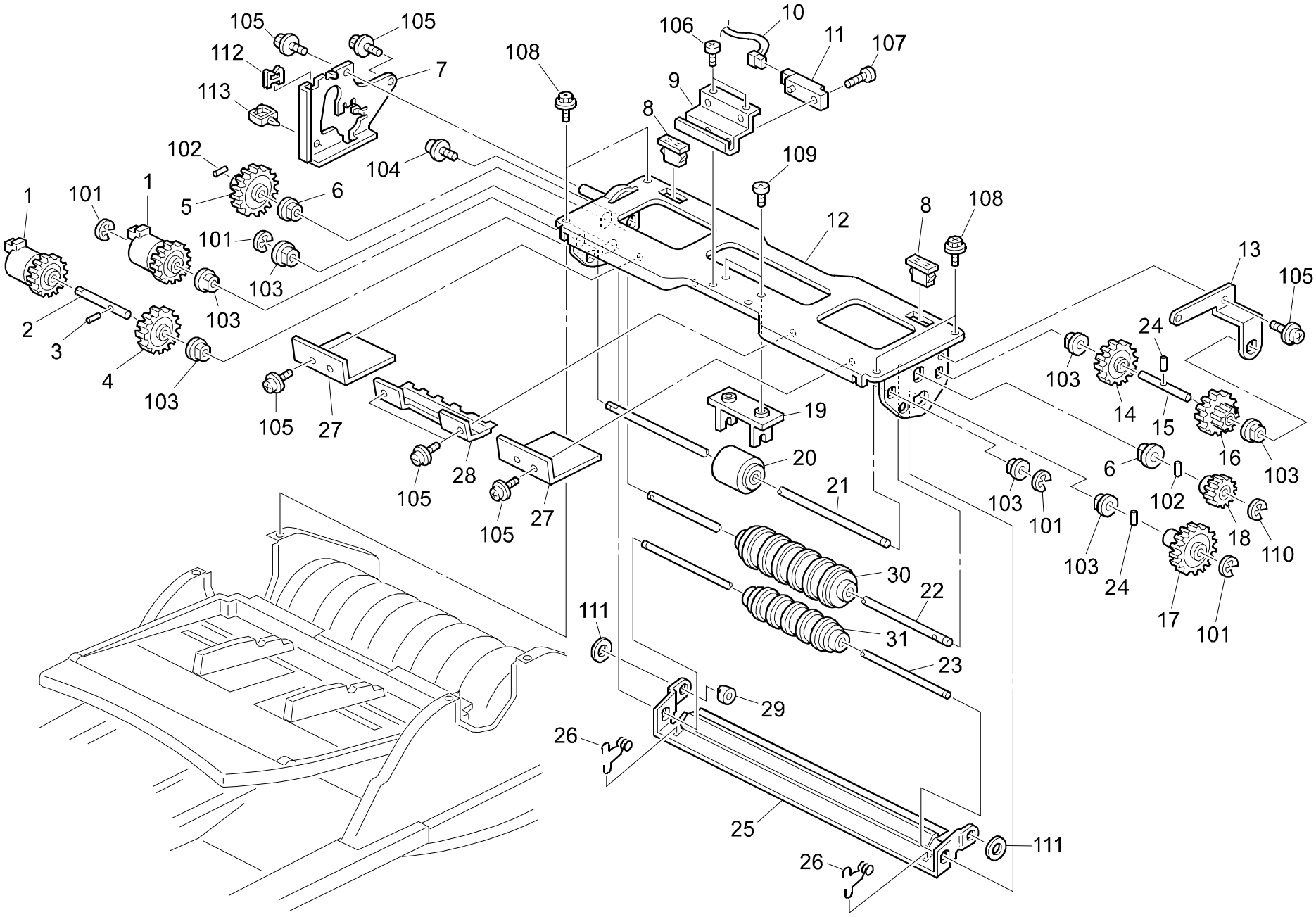
Option with G407/G408

2.ORIGINAL FEED TABLE (G407/G408/G410/G411)

Index No.	Part No.	Description	Q'ty Per Assembly
1	G406 3530	Left Side Fence	1
2	A048 6749	Decal - Manual Feed	1
3	G406 3540	Right Side Fence	1
4	G404 3522	Bottom Tray Pad	1
5	G404 3523	Support Plate	1
6	G407 3706	Original Bottom Plate	1
7	G407 3392	Side Fence Rack	2
8	AB01 3492	Gear - 16Z	1
9	G404 3402	Gear - 52Z	1
10	G404 3230	Gear - 43Z	1
11	AA08 2070	Bushing - 8x16x7	2
12	G407 3992	Separation Guide	1
13	G407 3993	Separation Guide Plate	1
14	G404 3408	Shaft Seal	2
15	G407 3705	Original Table	1
16	G406 3518	Support Plate	1
17	G406 3519	Support Plate Sheet	2
18	G404 3515	Document Support Lever	1
19	G404 3401	Cam Shaft	1
20	G406 3404	Spring - Table	1
21	AA16 1141	Cushion -12x7x4	2
22	G404 3410	Pad - Sensor	1
23	G407 3326	Spring Plate	1
24	G404 3403	Cam - Document Table	1
25	G514 5350	Endorser Relay Harness	1
26	G514 5000	EDU Board	1
27	G514 3800	Solenoid Bracket	1
28	G514 3700	Endorser Unit	1
29	G404 3524	Bottom Plate Stay	1
30	G406 3516	Paper Stopper Original Tray	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0452 3008Z	Bind Tapping Screw - M3x8	
102	0632 0120	Parallel Pin - M2x12	
103	0720 0040E	Retaining Ring - M4	
104	0314 0080B	Philips Pan Head Screw - M4x8	
105	0720 0060E	Retaining Ring - M6	
106	0451 3005B	Tapping Screw - M3x5	
107	1105 0410	Card Spacer - 9.4mm	
108	0451 3006B	Tapping Screw - M3x6	
109	0802 5270	Tapping Screw	

3.ORIGINAL FEED SECTION 1 (G407/G408/G410/G411)

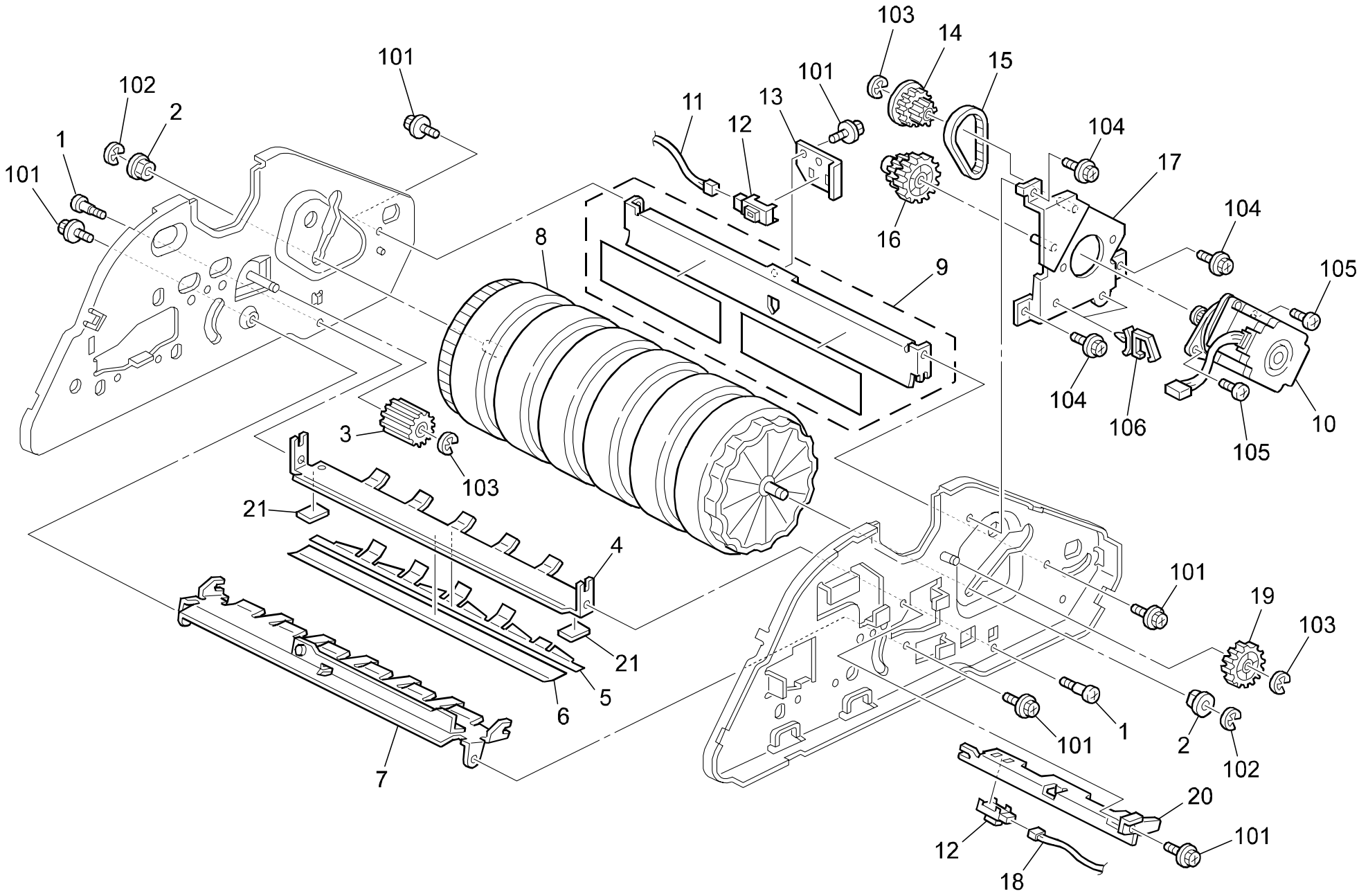


3.ORIGINAL FEED SECTION 1 (G407/G408/G410/G411)

Index No.	Part No.	Description	Q'ty Per Assembly
*	G407 3213	Separation Unit Ass'y	1
1	G012 5360	Magnetic Clutch	2
2	G404 3690	Shaft	1
3	G404 3407	Parallel Pin - M1.5	2
4	G404 3692	Gear - 45Z	1
5	G404 3652	Gear - 50Z	1
6	AA08 2070	Bushing - 8x16x7	2
7	G407 3391	Front Bracket - Separation Unit	1
8	A680 1181	Magnetic Catch	2
9	G404 3620	Paper Feed Sensor Bracket	1
10	G404 5540	Harness - Document Sensor	1
11	A010 5700	Sensor	1
12	G404 3601	Separation Frame	1
13	G404 3675	Separation Drive Bracket	1
14	G404 3677	Gear - 45Z	1
15	G404 3676	Drive Shaft	1
16	G404 3678	Gear - 45/25Z	1
17	G404 3672	Gear - 48Z	1
18	G404 3651	Grar - 23z	1
19	G404 3632	Pick-up Roller Holder	1
20	G404 3630	Pick-up Roller	1
21	G404 3631	Pick-up Shaft	1
22	G404 3650	Feed Shaft	1
23	G404 3670	Separation Shaft	1
24	G404 3606	Parallel Pin - 1.5x15	2
25	G404 3683	Roller Lever	1
26	G404 3673	Spring - Separation Unit	2
27	G407 3389	Paper Feed Guide Plate	2
28	G404 3684	Upper Paper Support	1
29	G404 3674	Bushing - Separation Roller	1
30	G404 3640	Feed Roller	1
31	G404 3660	Separation Roller	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0720 0040E	Retaining Ring - M4	
102	0632 0120	Parallel Pin - M2x12	
103	0805 3480	Bushing - 6mm	
104	0951 4006B	Philips Screw With Washer - M4x6	
105	0951 3006B	Philips Screw With Flat Washer - M3x6	
106	0313 0060B	Philips Pan Head Screw - M3x6	
107	0313 0120B	Philips Pan Head Screw - M3x12	
108	0451 3006B	Tapping Screw - M3x6	
109	0452 3008Z	Bind Tapping Screw - M3x8	
110	0720 0060E	Retaining Ring - M6	
111	0807 7020	Spacer 10.5mm x 16mm x 0.5	
112	1105 0328	Harness Clamp - ES-0505	
113	1105 0229	Clamp	

4.ORIGINAL FEED SECTION 2 (G407/G408/G410/G411)

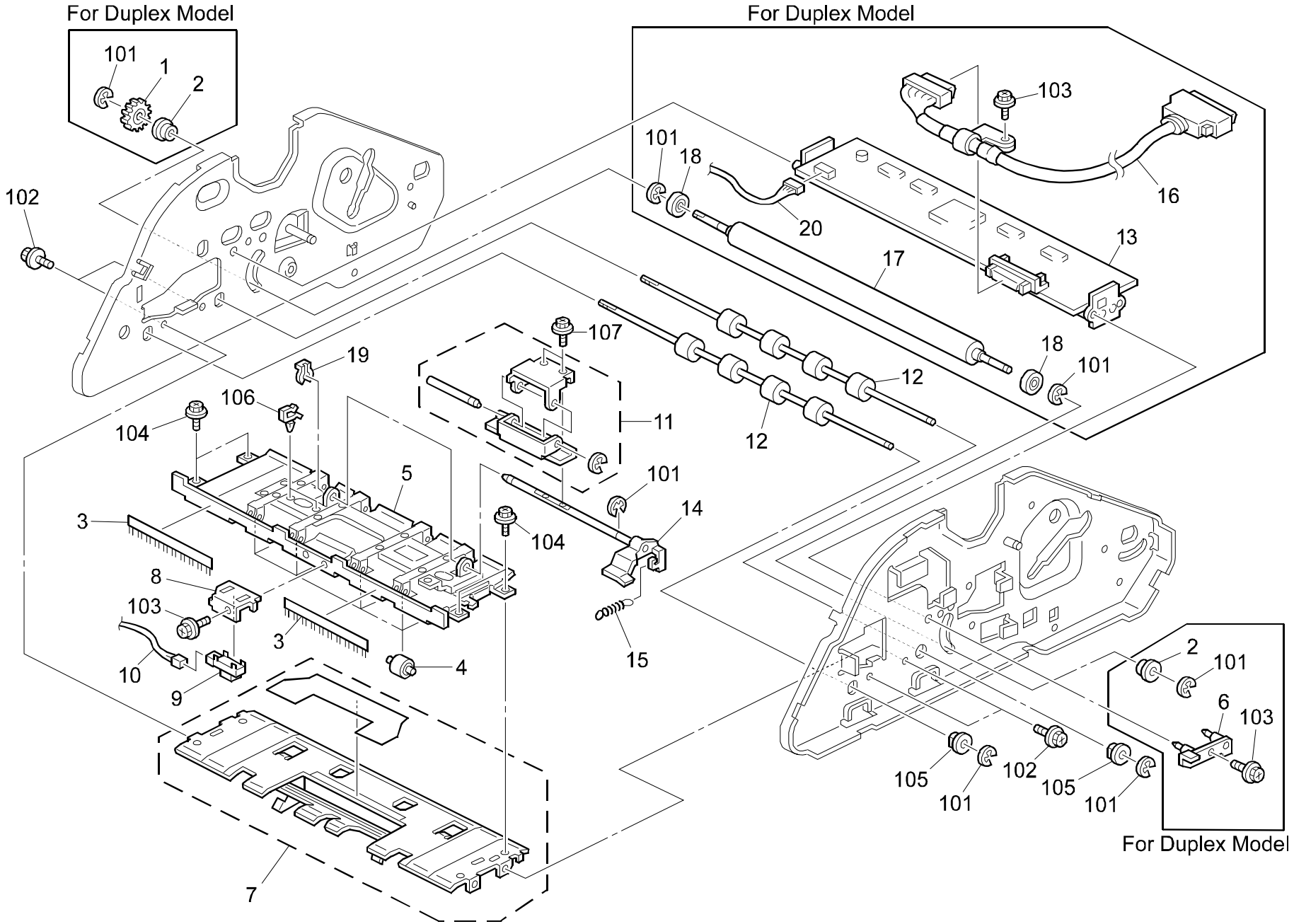


4.ORIGINAL FEED SECTION 2 (G407/G408/G410/G411)

Index No.	Part No.	Description	Q'ty Per Assembly
1	AA14 3307	Stepped Screw - M3	2
2	AA08 2070	Bushing - 8x16x7	2
3	AB01 1192	Idler Gear - 25Z	1
4	G407 3345	ADF Guide Plate	1
5	G407 3995	Separation Drum Guide	1
6	G407 3346	ADF White Sheet	1
7	G407 3580	Middle Guide Plate	1
8	G407 3410	Transport Drum Ass'y	1
9	G407 3430	Registration Guide Plate	1
10	G407 3365	Feed Moter - DC 38W	1
11	G407 5390	Harness - Registration Sensor	1
12	AW01 0049	Photo Reflection Sensor	2
13	G407 3425	Transport Sensor Bracket	1
14	AB01 7494	Feed Gear - 22/45Z	1
15	G407 3387	Timing Belt - S2M172	1
16	AB01 7493	Gear Pulley - 22/45Z	1
17	G407 3360	Bracket - Paper Feed Motor	1
18	G407 5395	Harness - Paper Jam Sensor	1
19	AB01 1191	Idler Gear - 38Z	1
20	G407 3591	Middle Bracket - Reflection Sensor	1
21	G404 2715	Cushion - 10x6.5	2

Index No.	Part No.	Description	Q'ty Per Assembly
101	0451 3006B	Tapping Screw - M3x6	
102	0720 0060E	Retaining Ring - M6	
103	0720 0040E	Retaining Ring - M4	
104	0802 5276	Tapping Screw With Waser - M3x6	
105	0434 0060B	Pan Head Self-tapping Screw - M4x6	
106	1105 0291	Harness Clamp - LWS-3S	

5.ORIGINAL FEED SECTION 3 (G407/G408/G410/G411)

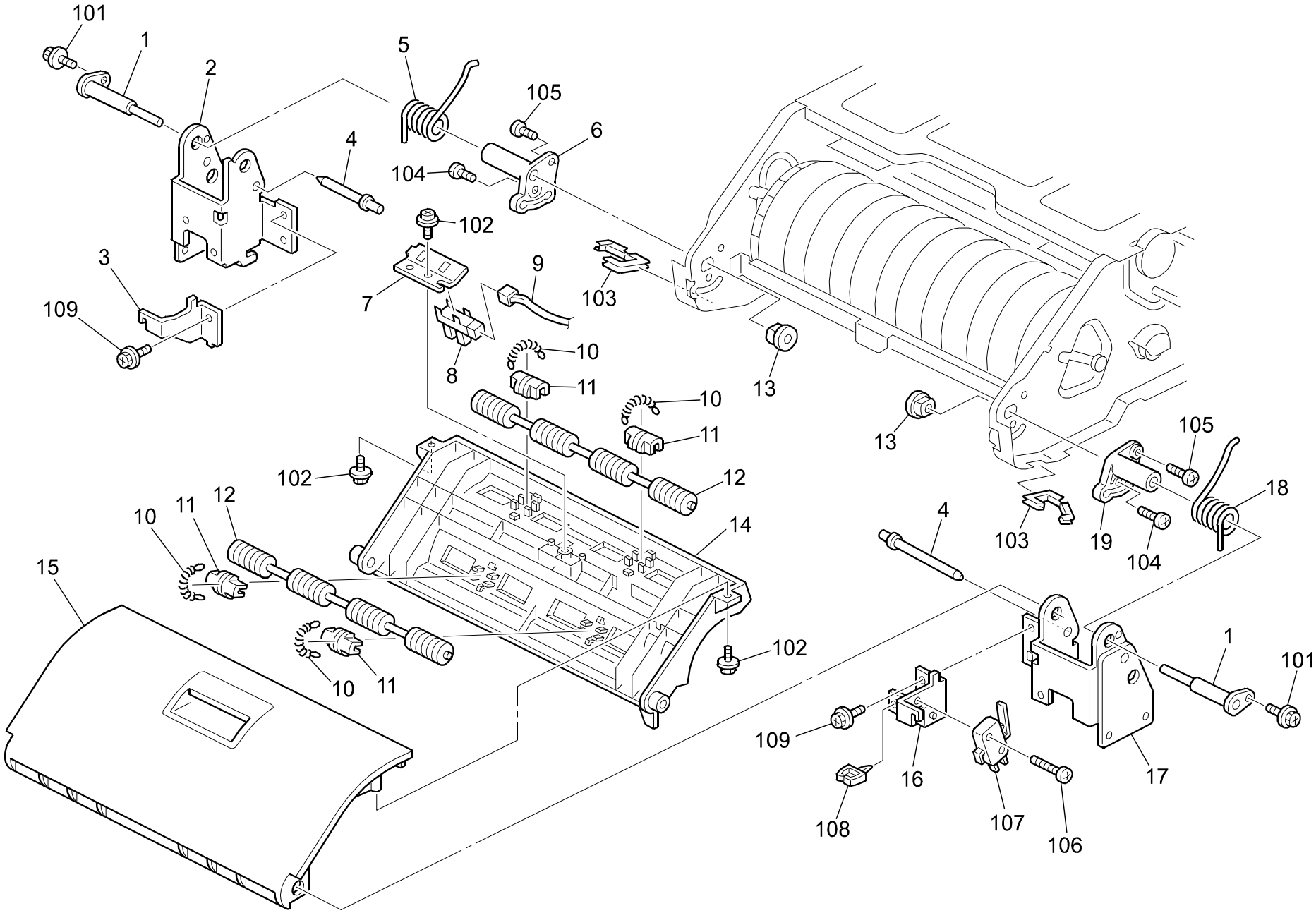


5.ORIGINAL FEED SECTION 3 (G407/G408/G410/G411)

Index No.	Part No.	Description	Q'ty Per Assembly
1	AB01 1197	Gear - 18Z	1
2	AA08 0247	Bushing - 6mm	2
3	G407 3535	Exit Discharge Brush	2
4	AF04 0031	Driven Roller	8
5	G407 3511	Upper Guide Plate	1
6	G407 3610	Guide Plate Bracket	1
7	G407 3550	Lower Guide Plate	1
8	G407 3531	Bracket - Photo Reflection Sensor	1
9	AW01 0049	Photo Reflection Sensor	1
10	G407 5400	Relay Harness - Exit Sensor	1
11	G407 3520	Pressure Arm	1
12	AF02 0457	Exit Roller	2
13	G408 5500	Contact Image Sensor	1
14	G407 3525	Arm - Original Feed Sensor	1
15	AA06 0780	Tension Spring	1
16	G408 5350	Cable - CIS	1
17	G408 3501	Rear Roller	1
18	G408 3502	Stopper Guide Collar	2
19	5447 2681	Snap Ring	1
20	G408 5360	Harness - CIS	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0720 0040E	Retaining Ring - M4	
102	0802 5276	Tapping Screw With Waser - M3X6	
103	0451 3006B	Tapping Screw - M3x6	
104	0451 3005W	Tapping Screw - 3x5	
105	0805 3480	Bushing - 6mm	
106	1105 0283	Clamp	
107	0313 0060B	Philips Pan Head Scrwe - M3X6	

6.ORIGINAL FEED SECTION 4 (G407/G408/G410/G411)

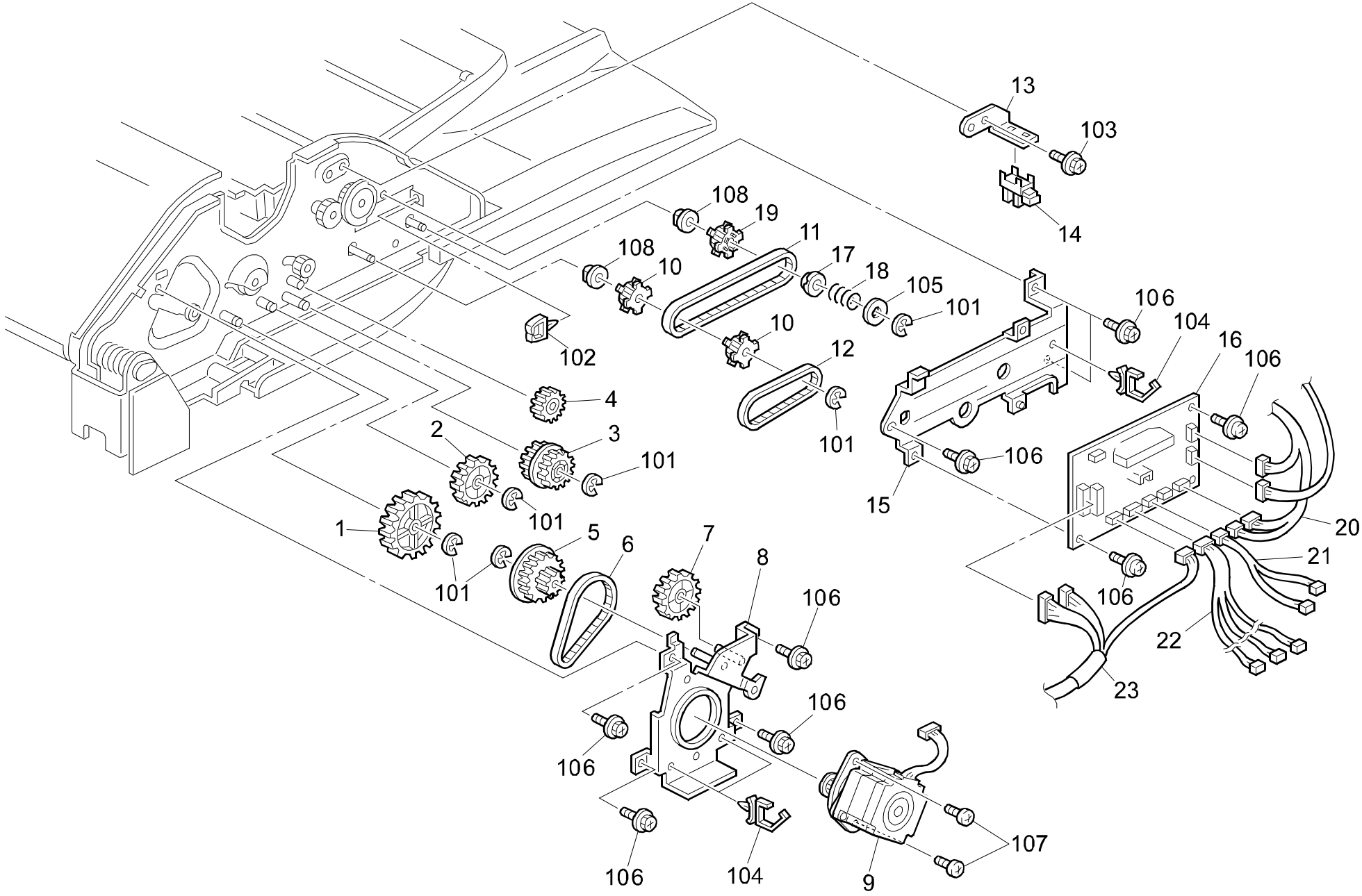


6.ORIGINAL FEED SECTION 4 (G407/G408/G410/G411)

Index No.	Part No.	Description	Q'ty Per Assembly
1	G407 3340	Contact Point Shaft	2
2	G407 3336	Rear Hinge Bracket	1
3	G407 3623	Rear Stopper Bracket	1
4	AA14 9375	Stopper Shaft	2
5	AA06 6307	Rear Torsion Spring	1
6	G407 3316	Rear Side Plate	1
7	G407 3424	Sensor Bracket - Paper Feed	1
8	AW01 0049	Photo Reflection Sensor	1
9	G407 5385	Transport Sensor Harness	1
10	AA06 0791	Spring	4
11	AA08 0227	Bushing - M4	4
12	G407 3423	Driven Roller	2
13	AA08 2074	Bushing - M8	2
14	G407 3422	Upper Guide Plate	1
15	G407 3426	ADF Upper Cover	1
16	G407 3622	Switch Bracket	1
17	G407 3333	Front Hinge Bracket	1
18	AA06 6308	Front Torsion Spring	1
19	G407 3315	Front Side Plate	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0451 3005W	Tapping Screw - 3x5	
102	0450 3008B	Tapping Screw - M3x8	
103	1105 0334	Edge Saddle - 17mm	
104	0801 0192	Bind Screw - M4X8	
105	0960 3006W	Philips Flange Screw - M3X6	
106	0313 0140B	Philips Pan Head Screw - M3x14	
107	1204 2466	Microswitch - V-16506-1C25	
108	1105 0229	Clamp	
109	0451 3006B	Tapping Screw - M3x6	

7.ORIGINAL FEED DRIVE (G407/G408/G410/G411)

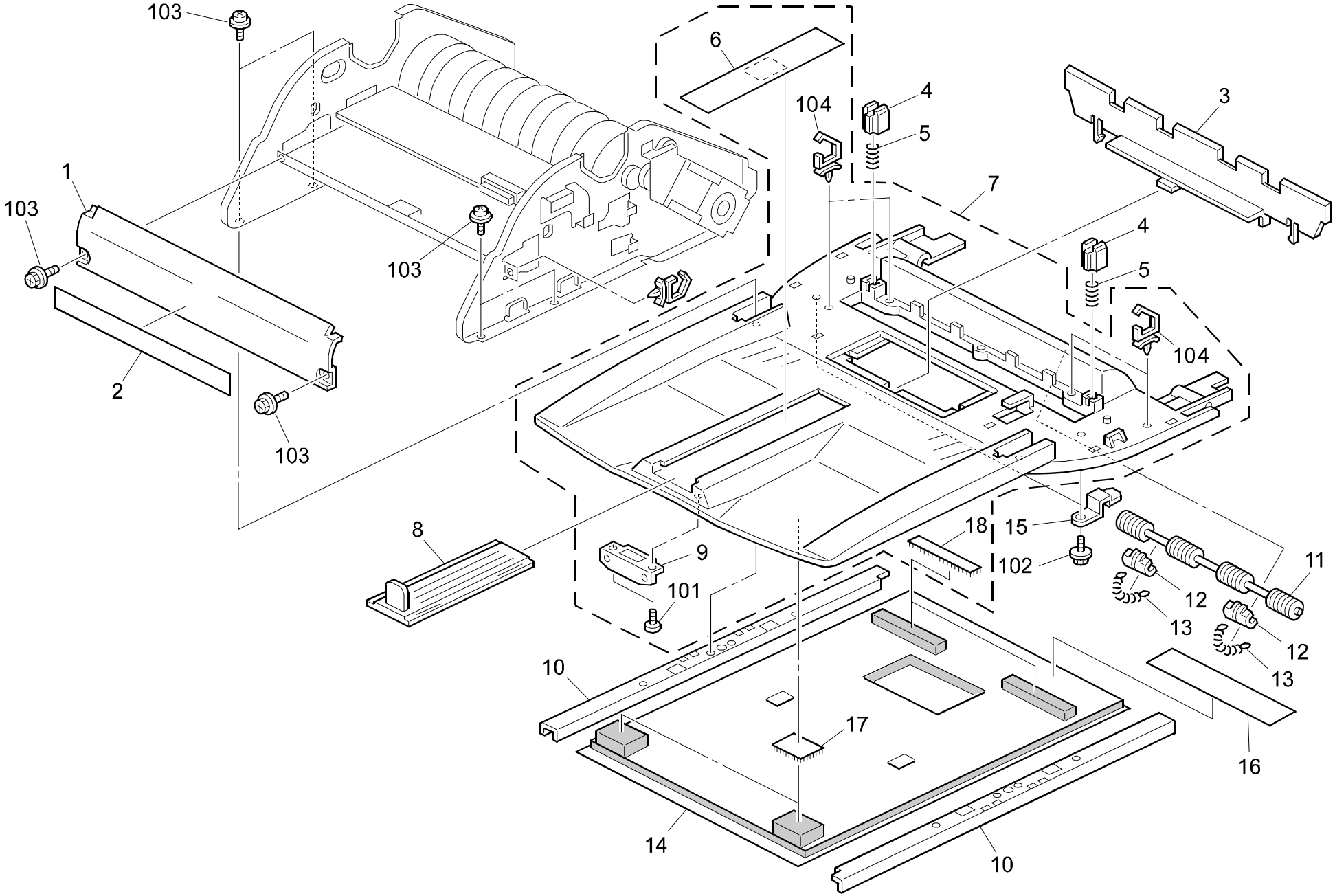


7.ORIGINAL FEED DRIVE (G407/G408/G410/G411)

Index No.	Part No.	Description	Q'ty Per Assembly
1	AB01 1193	Gear - 49Z	1
2	AB01 1194	Gear - 37Z	1
3	AB01 7496	Gear Pulley	1
4	AB01 1195	Idler Gear	1
5	AB01 7495	Gear Pulley	1
6	G407 3387	Timing Belt - S2M172	1
7	AB01 1196	Gear - 45Z	1
8	G407 3380	Transport Motor Bracket	1
9	G407 3395	Transport Motor - DC62W	1
10	AB03 0616	Drive Roller Pulley	2
11	G407 3661	Timing Belt - S2M194	1
12	G407 3660	Timing Belt - S2M150	1
13	G407 3325	Left Sensor Bracket	1
14	AW02 0056	Photointerruptor - EE-SX4235A-P1	1
15	G407 3620	Board Bracket	1
16	G407 5150	ADU Board	1
16	G408 5000	RADU Board (Duplex Model)	1
17	A470 1703	Shift Clutch	1
18	AA06 3332	Pressuer Spring	1
19	AB03 0624	Driven Pulley	1
20	G407 5360	Harness - Paper Feed Motor	1
21	G407 5365	Harness - ADF Clutch	1
22	G407 5370	Harness - Original Sensor	1
23	G407 5410	Interface Harness - ADF	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0720 0040E	Retaining Ring - M4	
102	1105 0229	Clamp	
103	0451 3006B	Tapping Screw - M3x6	
104	1105 0291	Harness Clamp - LWS-3S	
105	0807 4146	Flat Washer - 6.3x18x1	
106	0802 5276	Tapping Screw - M3X6	
107	0434 0060B	Pan Head Self-tapping Screw - M4x6	
108	0805 3480	Bushing - 6mm	

8.SCANNER SECTION 1 (G407/G408/G410/G411)

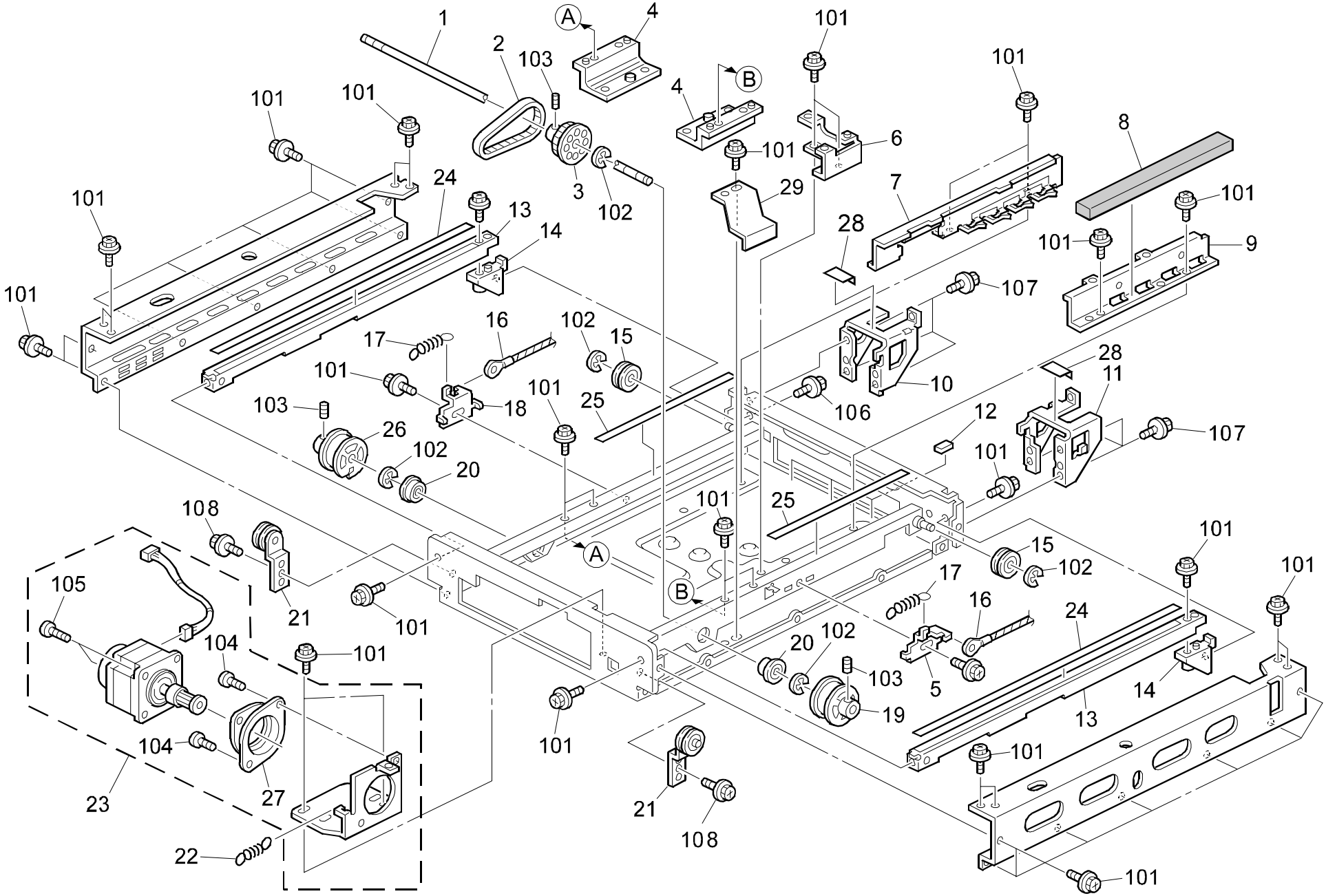


8.SCANNER SECTION 1 (G407/G408/G410/G411)

Index No.	Part No.	Description	Q'ty Per Assembly
1	G407 4055	Upper Exit Cover	1
2	G514 3711	Decal - Endorser Set	1
3	G407 4056	Lower Exit Cover	1
4	G408 3505	Pressure Slider	2
5	AA06 3330	Tension Spring	2
6	G407 4022	Caution Decal - Original Stopper	1
7	G407 4020	Platen Cover	1
8	G407 4023	Tray Stopper Fence	1
9	AG07 0013	Magnetic Catch	1
10	G404 4114	Bracket - Platen Cover	2
11	G407 3423	Driven Roller	1
12	AA08 0227	Bushing - M4	2
13	AA06 0779	Pressure Spring	2
14	G407 4039	Platen Cover Sheet	1
15	G408 3510	Spring Stopper	2
16	G407 4051	Decal - Platen Cover	1
17	G407 4049	Front Velcro	2
18	G407 4050	Rear Velcro	2

Index No.	Part No.	Description	Q'ty Per Assembly
101	0802 5278	Tapping Screw - M4x10	
102	0450 3008B	Tapping Screw - M3x8	
103	0451 3008H	Tapping Screw - 3x8	
104	1105 0291	Harness Clamp - LWS-3S	

9.SCANNER SECTION 2 (G407/G408/G410/G411)

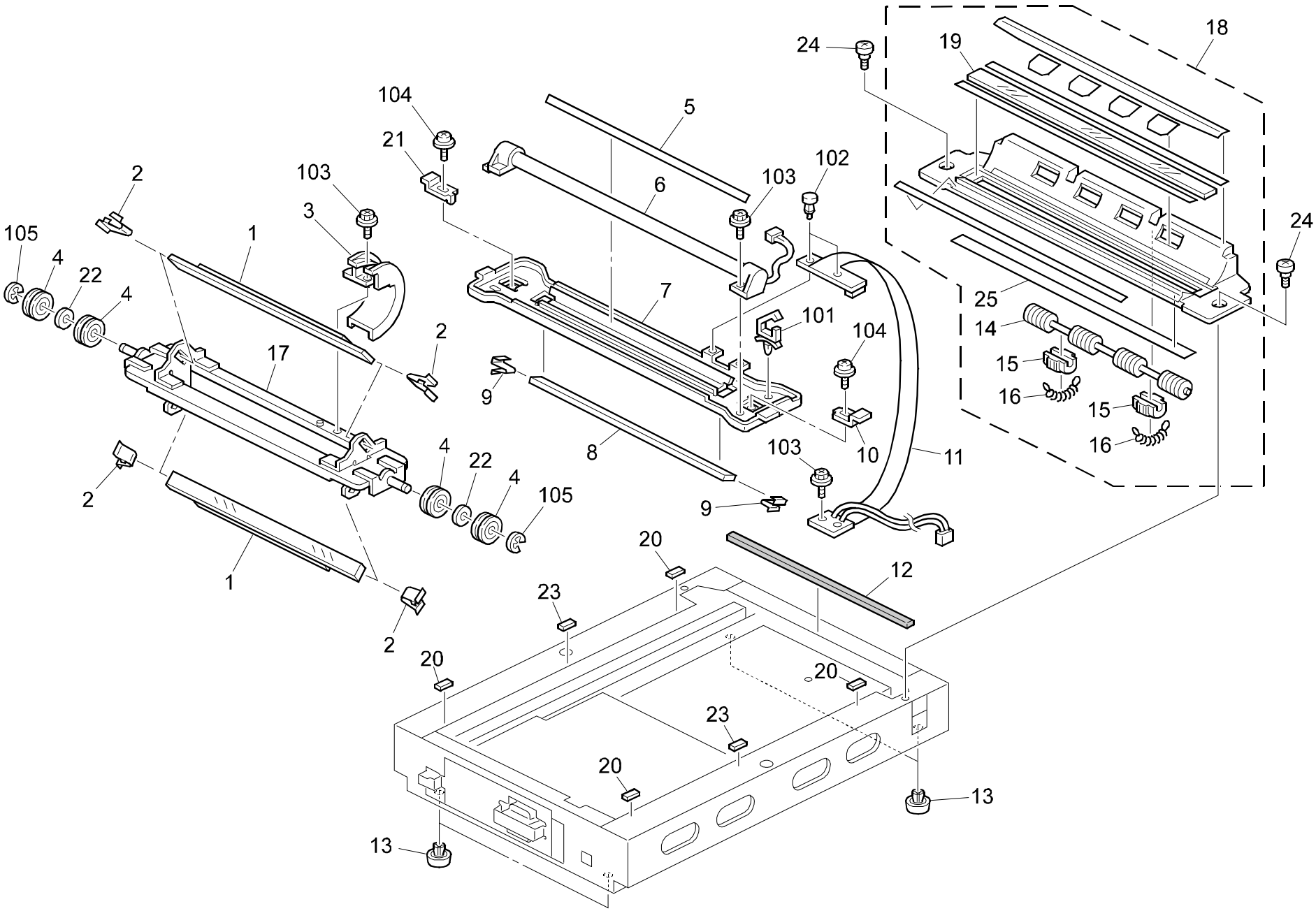


9.SCANNER SECTION 2 (G407/G408/G410/G411)

Index No.	Part No.	Description	Q'ty Per Assembly
1	AA14 9382	Driven Shaft	1
2	AA04 3439	Timing Belt - S2M-224	1
3	G407 1185	Timing Pulley - 65Z	1
4	A232 1713	Lens Block Supporter	2
5	A232 1722	Rear Tension Plate - Scanner Wire	1
6	G407 1220	Flexible Board Bracket	1
7	G407 1050	Left Support Plate - SCU	1
8	G407 1221	Flexible Board Guide	1
9	G407 1051	Right Support Plate - SCU	1
10	G407 1170	Left Hinge Bracket	1
11	G407 1171	Right Hinge Bracket	1
12	G407 1225	SCU Lower Guide	3
13	A232 1732	Rail Bracket	2
14	A232 1728	Rail Supporter	2
15	AB03 2060	Pulley - M22	2
16	AA05 0103	Scanner Drive Wire	2
17	AA06 0703	Tension Spring	2
18	A232 1712	Front Tension Plate - Scanner Wire	1
19	AB03 2062	Rear Scanner Pulley	1
20	A232 3566	Ball Bearing - 8x16x5	2
21	A232 1710	Idler Pulley	2
22	AA06 0702	Tension Spring	1
23	G407 1060	Scanner Motor - DC 43W	1
24	A232 1731	Scanner Rail	2
25	A232 1707	Slide Rail	2
26	AB03 2061	Front Scanner Pulley	1
27	AA16 1122	Motor Cushion	1
28	A377 1138	Magnet Catch Seal	2
29	G407 1175	Bracket:Harness:AC	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	0451 3006B	Tapping Screw - M3x6	
102	0720 0060E	Retaining Ring - M6	
103	0575 0050E	Hexagon Headless Set Screw - M5x5	
104	0314 0060B	Philips Pan Head Screw - M4x6	
105	0314 0100B	Philips Pan Head Screw - M4x10	
106	0450 3008B	Tapping Screw - M3X8	
107	0451 4008B	Philips Tapping Screw - M4X8	
108	0451 3005B	Tapping Screw - M3X5	

10.SCANNER SECTION 3 (G407/G408/G410/G411)

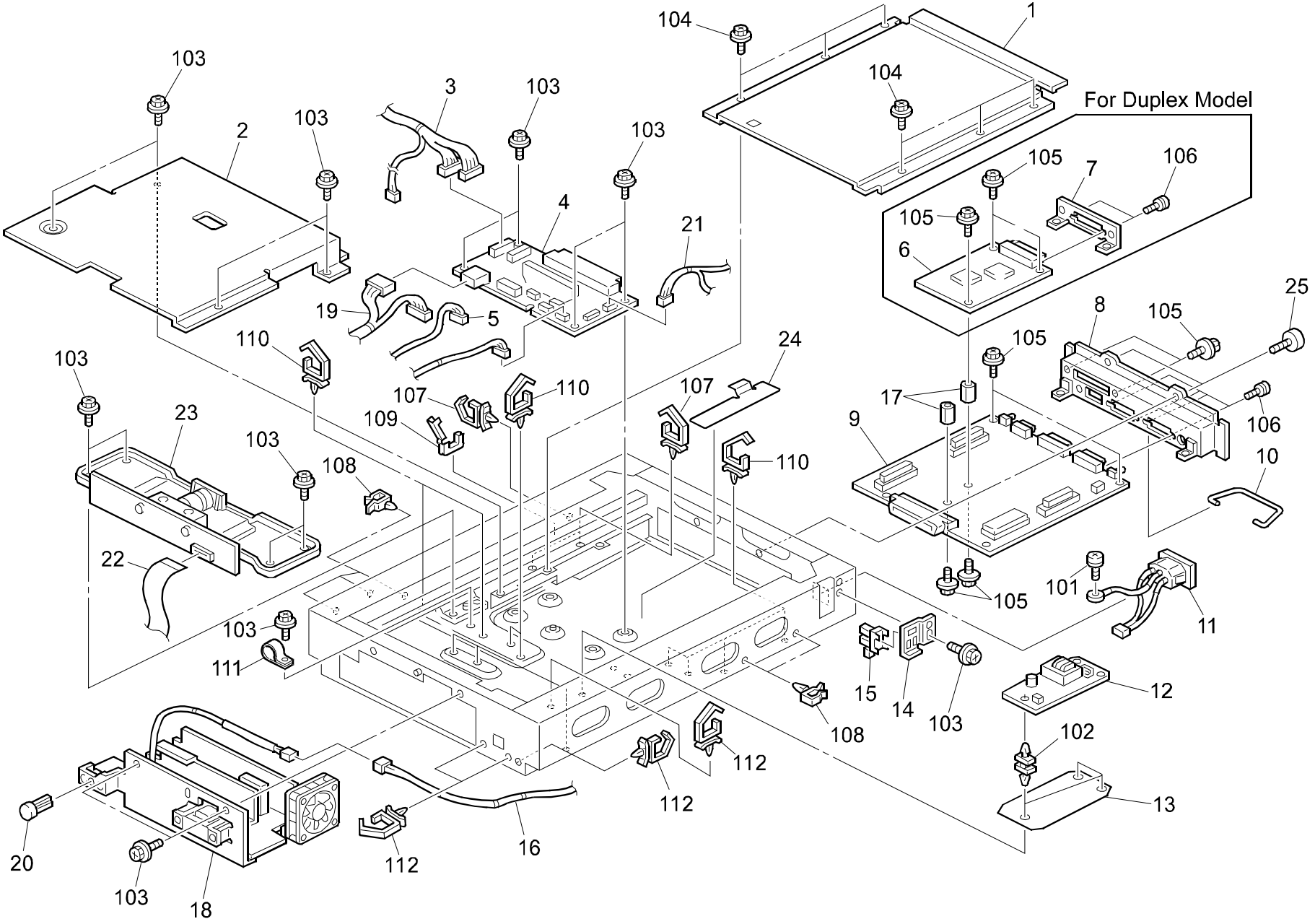


10.SCANNER SECTION 3 (G407/G408/G410/G411)

Index No.	Part No.	Description	Q'ty Per Assembly
1	A232 1799	2nd Mirror	2
2	G404 2810	Spring Plate - Second Mirror	4
3	A232 1808	Harness Guide	1
4	AB03 2060	Pulley - M22	4
5	A232 1788	Reflector	1
6	AX50 0061	Exposure Lamp	1
7	A232 1782	1st Scanner	1
8	AC03 0110	Scanner Mirror	1
9	A232 1789	1st Mirror Holder	2
10	A232 1792	Rear Wire Holder	1
11	G407 5445	Flexible Board	1
12	G407 1156	Support Seal	2
13	AH01 0009	Rubber Pad - H5	4
14	G407 3423	Driven Roller	1
15	AA08 0227	Bushing - M4	2
16	AA06 0779	Pressure Spring	2
17	A232 1798	2nd Scanner Ass'y	1
18	G407 1010	ADF Exposure Glass Ass'y	1
19	AC01 5010	Dust Proof Glass	1
20	G407 1101	Exposure Glass Spacer	4
21	A232 1791	Front Wire Holder	1
22	AA13 2174	Spacer - M8	2
23	AA16 1133	Cushion - 4x15x1	2
24	AA14 3517	Guide Plate Screw	2
25	A193 1752	White Sheet	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	1105 0460	Clamp	
102	1005 0728	Rivet - Nrp335	
103	0451 3006B	Tapping Screw - M3x6	
104	0951 3006B	Philips Screw With Flat Washer - M3x6	
105	0720 0060E	Retaining Ring - M6	

11.SCANNER ELECTRICAL (G407/G408/G410/G411)



11.SCANNER ELECTRICAL (G407/G408/G410/G411)

Index No.	Part No.	Description	Q'ty Per Assembly
1	G407 1122	Rear Inner Cover	1
2	G407 1021	Front Inner Cover	1
3	G407 5405	ADF Scanner Harness	1
4	G407 5100	IOB Board	1
5	G407 5430	Harness PSU/IOB	1
6	G408 5100	RCU Board	1
7	G408 1161	Connector Bracket	1
8	G407 1054	Connector Cover (G407/G410)	1
8	G407 1055	Connector Cover (G408/G411)	1
9	G407 5652	SCU Board (G407/G410)	1
9	G408 5652	RSCU Board (G408/G411)	1
10	G407 1250	SCU Handle	1
11	G407 5415	Inlet Harness	1
12	AZ50 0052	Lamp Stabilizer	1
13	G407 1222	Insulating Sheet	1
14	G407 1200	Bracket - Home Position Sensor	1
15	AW02 0056	Photointerruptor - EE-SX4235A-P1	1
16	G407 5420	AC Harness	1
17	G407 1260	Spacer	2
18	G407 5020	Power Supply Unit - 115V	1
18	G407 5030	Power Supply Unit - 220-240V	1
19	G407 5425	Harness - IOB/PSU	1
20	G407 1215	Key-top Main Switch	1
21	G407 5355	Scanner Control Harness	1
22	G407 5350	Harness - FFC/SBU	1
23	G407 1230	Lens Block Ass'y	1
24	G407 1223	FFC Sheet	1
25	G020 1391	Screw - M3X4.5	2

Index No.	Part No.	Description	Q'ty Per Assembly
101	0801 0149	Philips Pan Head Screw - M4x6	
102	1106 0384	Supportor - P.C.B.	
103	0451 3006B	Tapping Screw - M3x6	
104	0453 3006B	Tapping Screw - M3x6	
105	0451 3005B	Tapping Screw - M3x5	
106	0950 2506Z	Screw With Spring Washer - M2.5X6	
107	1105 0291	Harness Clamp - LWS-3S	
108	1105 0267	Harness Clamp - YMC-10-0	
109	1105 0334	Edge Saddle - 17mm	
110	1105 0310	Harness Clamp - LWS-1S	
111	1105 0035	Nylon Clamp - 9N	
112	1105 0460	Clamp	

12.RCU BOARD (G408/G411)

CAPACITOR

SYMBOL NO.	INDEX NO.
C101	128
C102	124
C103	125
C104	128
C105	126
C106	126
C107	114
C108	114
C109	128
C110	127

SYMBOL NO.	INDEX NO.
C111	126
C112	126
C113	128
C114	----
C115	114
C116	114
C117	126
C118	126
C119	126
C120	126

SYMBOL NO.	INDEX NO.
C121	126
C122	126
C123	126
C124	126
C125	126
C126	126
C127	126
C128	126
C129	126
C130	126

SYMBOL NO.	INDEX NO.
C131	126
C132	127
C133	128
C134	126
C135	----
C136	127
C137	128
C138	127
C139	128
C140	127

SYMBOL NO.	INDEX NO.
C 141	128
C 142	128
C 143	127
C1 44	128
C 145	127
C 146	128
C 147	127
C 148	128
C 149	----
C 150	----

SYMBOL NO.	INDEX NO.
C 151	127
C 152	128
C 153	126
C 154	----
C 155	124
C 156	----
C1 57	----
C 158	124
C 159	127
C1 60	128

CONNECTOR

SYMBOL NO.	INDEX NO.
CN501	103
CN502	102

FILTER

SYMBOL NO.	INDEX NO.
FIL101	116
FIL102	115
FIL103	115
FIL104	115
FIL105	115
FIL106	115
FIL107	115
FIL108	115
FIL109	115
FIL110	115

SYMBOL NO.	INDEX NO.
FIL111	115
FIL112	116
FIL113	----

IC

SYMBOL NO.	INDEX NO.
IC101	2
IC102	129
IC103	1
IC104	129
IC105	105
IC106	109
IC107	107
IC108	108
IC109	107
IC110	106

JUMPER

SYMBOL NO.	INDEX NO.
JP101	123
JP102	130
JP103	123
JP104	123
JP105	123
JP106	123
JP107	123
JP108	123
JP109	123
JP110	123

SYMBOL NO.	INDEX NO.
JP111	123
JP112	123
JP113	123
JP114	123
JP115	123
JP116	123
JP117	123
JP118	123
JP119	121
JP120	123

SYMBOL NO.	INDEX NO.
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JP123	123
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JP125	123
JP126	123
JP127	123
JP128	123
JP129	123
JP130	123

SYMBOL NO.	INDEX NO.
JP131	123
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JP133	123
JP134	123
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JP137	123
JP138	123
JP139	123
JP140	123

12.RCU BOARD (G408/G411)

JUMPER

SYMBOL NO.	INDEX NO.
JP141	123

Q

SYMBOL NO.	INDEX NO.
Q101	104

OSC

SYMBOL NO.	INDEX NO.
OSC101	111
OSC102	112

REG

SYMBOL NO.	INDEX NO.
REG101	110

RESISTOR

SYMBOL NO.	INDEX NO.
R101	121
R102	121
R103	121
R104	121
R105	----
R106	118
R107	120
R108	119
R109	121
R110	121

SYMBOL NO.	INDEX NO.
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R113	121
R114	121
R115	121
R116	121
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R118	121
R119	121
R120	121

SYMBOL NO.	INDEX NO.
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R125	121
R126	121
R127	121
R128	121
R129	119
R130	120

SYMBOL NO.	INDEX NO.
R131	121
R132	121
R133	121
R134	121
R135	121
R136	121
R137	121
R138	121
R139	121
R140	122

SYMBOL NO.	INDEX NO.
R141	118
R142	122
R143	118
R144	118
R145	118
R146	118
R147	118
R148	118
R149	118
R150	118

RESISTOR

SYMBOL NO.	INDEX NO.
R151	118
R152	118
R153	118
R154	118
R155	118
R156	118
R157	118
R158	118
R159	118
R160	122

SYMBOL NO.	INDEX NO.
R161	122
R162	122
R163	122
R164	122
R165	122
R166	122
R167	122
R168	122
R169	122
R170	122

SYMBOL NO.	INDEX NO.
R171	122
R172	122
R173	122
R174	122
R175	122
R176	121
R177	121
R178	121
R179	121
R180	121

SYMBOL NO.	INDEX NO.
R181	121
R182	121
R183	121
R184	121
R185	121
R186	121
R187	121
R188	121
R189	121
R190	121

SYMBOL NO.	INDEX NO.
R191	121
R192	121
R193	121
R194	121
R195	121
R196	118
R197	118
R198	118
R199	121
R200	121

SYMBOL NO.	INDEX NO.
R201	121
R202	121
R203	121
R204	121
R205	121
R206	121
R207	121
R208	121
R209	----
R210	118

SYMBOL NO.	INDEX NO.
R211	118
R212	118
R213	121
R214	121
R215	121
R216	121
R217	----
R218	----
R219	121
R220	121

12.RCU BOARD (G408/G411)

RESISTOR

SYMBOL NO.	INDEX NO.
R221	121
R222	121
R223	118
R224	118
R225	118
R226	118
R227	118
R228	118
R229	118
R230	118

SYMBOL NO.	INDEX NO.
R231	118
R232	121
R233	121
R234	121
R235	121
R236	121
R237	121
R238	121
R239	121
R240	----

SYMBOL NO.	INDEX NO.
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R242	121
R243	121
R244	121
R245	121
R246	121
R247	121
R248	121
R249	121
R250	118

SYMBOL NO.	INDEX NO.
R251	118
R252	118
R253	118
R254	118
R255	121
R256	121
R257	121
R258	121
R259	121
R260	117

RN

SYMBOL NO.	INDEX NO.
RN101	113
RN102	113
RN103	113
RN104	113
RN105	113
RN106	113

TP

SYMBOL NO.	INDEX NO.
TP121	101
TP122	101

12.RCU BOARD (G408/G411)

Index No.	Part No.	Description	Q'ty Per Assembly
*	G408 5100	RCU Board	1
1	A232 5230	IC - NIPU M66384FP	1
2	G407 5500	IC - SIBC TC200C160EF-005	

Index No.	Part No.	Description	Q'ty Per Assembly
101	1100 1474	Test Pin	
102	1102 4834	Connector - 68P	
103	1102 8075	Connector - FX2-80P-1.27SVL	
104	1400 0392	Transistor - DTC114EK	
105	1407 2129	TTLIC - 74F04SJ	
106	1407 2134	TTLIC - 74F32SJ	
107	1407 2135	TTLIC - 74F74SJ	
108	1407 2137	IC - 74F138SJ	
109	1407 2506	IC - 74F191SJ	
110	1408 1266	Regulator - LT1086CM-3.3	
111	1503 0858	Osicllator - 39.3216MHZ	
112	1503 0859	Osicllator - 39.78MHZ	
113	1601 7805	Resistor Array - 33 Ω ±5% 1/16W	
114	1605 0847	Capacitor - 7PF ±0.5pF 50V	
115	1607 0927	Filter - ACF321825-220	
116	1607 0939	Filter - NFM41P11C204	
117	1630 4100	Resistor - 10 Ω ±5% 1/16W	
118	1630 4103	Resistor - 10KΩ ±5% 1/16W	
119	1630 4105	Resistor - 1.0MΩ ±5% 1/16W	
120	1630 4301	Resistor - 300 Ω ±5% 1/10W	
121	1630 4330	Resistor - 33 Ω ±5% 1/8W	
122	1630 4472	Resistor - 4.7KΩ ±5% 1/16W	
123	1634 0000	Registor - 0 Ω - 1/16w	
124	1644 0100	Capacitor - 10μF±20% 10V	
125	1644 0470	Capacitor - 47μF±20% 10V	
126	1660 2220	Capacitor - 22pF ±20% 35V	
127	1660 4102	Capacitor - 1000pF ±10% 50V	
128	1660 8104	Capacitor - 0.1μF+80-20% 25V	
129	1903 1006	DRAM 16M 1MX16 60NS EDO G4	

13.RSCU BOARD (G408/G411)

CAPACITOR

SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.
C 1	151	C 11	193	C 21	190	C 31	190	C 41	182	C 51	190	C 61	190
C 2	193	C 12	186	C 22	192	C 32	193	C 42	192	C 52	193	C 62	193
C 3	190	C 13	182	C 23	182	C 33	189	C 43	190	C 53	190	C 63	190
C 4	193	C 14	152	C 24	193	C 34	189	C 44	193	C 54	193	C 64	193
C 5	190	C 15	152	C 25	182	C 35	----	C 45	193	C 55	193	C 65	193
C 6	188	C 16	193	C 26	193	C 36	188	C 46	190	C 56	190	C 66	193
C 7	188	C 17	193	C 27	190	C 37	----	C 47	193	C 57	193	C 67	193
C 8	151	C 18	193	C 28	193	C 38	----	C 48	190	C 58	190	C 68	185
C 9	182	C 19	190	C 29	183	C 39	190	C 49	193	C 59	192	C 69	185
C 10	186	C 20	193	C 30	182	C 40	193	C 50	190	C 60	182	C 70	193

CAPACITOR

SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.
C 71	193	C81	193	C 91	190	C 101	----	C 111	193	C 121	----	C 131	191
C 72	193	C82	184	C 92	----	C 102	----	C 112	190	C 122	193	C 132	192
C 73	182	C83	192	C 93	----	C 103	193	C 113	187	C 123	193	C 133	192
C 74	----	C84	----	C 94	190	C 104	190	C 114	188	C 124	----	C 134	191
C 75	193	C85	193	C 95	193	C 105	----	C 115	188	C 125	191	C 135	----
C 76	153	C86	----	C 96	188	C 106	----	C 116	193	C 126	191	C 136	----
C 77	193	C87	----	C 97	188	C 107	193	C 117	190	C 127	191	C 137	----
C 78	190	C88	190	C 98	----	C 108	193	C 118	193	C 128	191	C 138	----
C 79	193	C89	193	C 99	----	C 109	190	C 119	193	C 129	191	C 139	----
C 80	182	C90	193	C 100	----	C 110	193	C 120	----	C 130	191	C 140	----

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CAPACITOR

SYMBOL NO.	INDEX NO.
C141	----
C142	----
C143	193
C144	190
C145	191
C146	----
C147	----
C148	----
C149	----
C150	190

SYMBOL NO.	INDEX NO.
C151	193
C152	193
C153	190
C154	190
C155	190
C156	190
C157	193
C158	193
C159	188
C160	193

SYMBOL NO.	INDEX NO.
C161	190
C162	193
C163	190
C164	190
C165	193
C166	193
C167	190
C168	193
C169	193
C170	193

SYMBOL NO.	INDEX NO.
C171	191
C172	191
C173	190
C174	193
C175	188
C176	188
C177	188
C178	----
C179	----
C180	----

SYMBOL NO.	INDEX NO.
C181	188
C182	193
C183	190
C184	193
C185	190

CONNECTOR

SYMBOL NO.	INDEX NO.
CN101	102
CN102	102
CN103	103
CN104	105
CN105	106
CN106	104
CN107	101

DIODE

SYMBOL NO.	INDEX NO.
D1	116
D2	117

FUSE

SYMBOL NO.	INDEX NO.
FU1	109

FILTER

SYMBOL NO.	INDEX NO.
FIL1	154
FIL2	154
FIL3	154
FIL4	154
FIL5	----
FIL6	154
FIL7	154
FIL8	154
FIL9	154
FIL10	----

SYMBOL NO.	INDEX NO.
FIL11	----
FIL12	155
FIL13	155
FIL14	154
FIL15	154
FIL16	154
FIL17	154
FIL18	154
FIL19	154
FIL20	154

SYMBOL NO.	INDEX NO.
FIL21	154
FIL22	154
FIL23	----
FIL24	155
FIL25	----
FIL26	154

IC

SYMBOL NO.	INDEX NO.
IC1	137
IC2	121
IC3	121
IC4	126
IC5	121
IC6	1
(Socket)	107
IC7	139
IC8	2
IC9	124
IC10	194

SYMBOL NO.	INDEX NO.
IC11	194
IC12	127
IC13	121
IC14	196
IC15	4
IC16	135
IC17	121
IC18	128
IC19	195
IC20	135

SYMBOL NO.	INDEX NO.
IC21	135
IC22	134
IC23	134
IC24	3
IC25	131
IC26	136
IC27	----
IC28	----
IC29	120
IC30	125

SYMBOL NO.	INDEX NO.
IC31	138
(Socket)	108
IC32	120
IC33	140
IC34	122
IC35	123
IC36	133
IC37	129
IC38	130
IC39	133
IC40	132

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IC

SYMBOL NO.	INDEX NO.
IC41	134
IC42	----
IC43	135
IC44	135

JUMPER

SYMBOL NO.	INDEX NO.
JP1	174
JP2	174
JP3	174
JP4	174
JP5	----
JP6	161
JP7	----
JP8	164
JP9	164
JP10	164

SYMBOL NO.	INDEX NO.
JP11	174
JP12	174
JP13	----
JP14	174
JP15	174
JP16	174
JP17	174
JP18	174
JP19	174
JP20	174

SYMBOL NO.	INDEX NO.
JP57	164
JP58	174
JP59	164
JP60	174
JP61	174
JP64	174
JP65	174
JP69	164
JP70	164
JP71	164

SYMBOL NO.	INDEX NO.
JP72	174
JP73	174
JP74	166
JP75	166
JP76	----
JP77	----
JP78	174
JP79	158
JP80	174
JP81	173

SYMBOL NO.	INDEX NO.
JP82	173
JP83	173
JP84	173

LED

SYMBOL NO.	INDEX NO.
LED1	118
LED2	118
LED3	119

OSC

SYMBOL NO.	INDEX NO.
OSC1	142
OSC2	144
OSC3	143
OSC4	----
OSC5	----

Q

SYMBOL NO.	INDEX NO.
Q1	114
Q2	115

REG

SYMBOL NO.	INDEX NO.
REG1	141

RESISTOR

SYMBOL NO.	INDEX NO.
R1	157
R2	164
R3	164
R4	164
R5	164
R6	157
R7	174
R8	174
R9	174
R10	174

SYMBOL NO.	INDEX NO.
R11	175
R12	177
R13	180
R14	176
R15	174
R16	174
R17	174
R18	174
R19	174
R20	179

SYMBOL NO.	INDEX NO.
R21	181
R22	156
R23	160
R24	160
R25	----
R26	160
R27	160
R28	160
R29	----
R30	178

SYMBOL NO.	INDEX NO.
R31	176
R32	165
R33	160
R34	174
R35	----
R36	----
R37	----
R38	164
R39	----
R40	----

SYMBOL NO.	INDEX NO.
R41	----
R42	160
R43	164
R44	----
R45	----
R46	----
R47	160
R48	160
R49	160
R50	160

13.RSCU BOARD (G408/G411)

RESISTOR

SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.
R51	163	R61	----	R71	160	R81	160	R91	164	R101	160	R111	174
R52	159	R62	----	R72	160	R82	164	R92	164	R102	160	R112	174
R53	164	R63	----	R73	----	R83	164	R93	164	R103	174	R113	174
R54	160	R64	174	R74	----	R84	164	R94	164	R104	160	R114	164
R55	160	R65	164	R75	164	R85	160	R95	164	R105	160	R115	164
R56	160	R66	----	R76	164	R86	160	R96	160	R106	168	R116	164
R57	160	R67	----	R77	164	R87	167	R97	160	R107	----	R117	164
R58	160	R68	160	R78	164	R88	160	R98	160	R108	----	R118	164
R59	160	R69	160	R79	174	R89	164	R99	164	R109	174	R119	164
R60	160	R70	160	R80	160	R90	164	R100	160	R110	174	R120	164

RESISTOR

SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.
R121	164	R131	158	R141	159	R151	164	R161	159	R171	163	R181	159
R122	164	R132	158	R142	163	R152	164	R162	164	R172	163	R182	159
R123	160	R133	158	R143	159	R153	164	R163	164	R173	163	R183	159
R124	164	R134	158	R144	164	R154	163	R164	160	R174	163	R184	159
R125	160	R135	----	R145	160	R155	164	R165	164	R175	163	R185	159
R126	164	R136	174	R146	164	R156	159	R166	163	R176	163	R186	159
R127	158	R137	174	R147	159	R157	160	R167	163	R177	163	R187	159
R128	158	R138	174	R148	163	R158	160	R168	163	R178	159	R188	159
R129	158	R139	174	R149	164	R159	160	R169	163	R179	159	R189	159
R130	158	R140	164	R150	164	R160	170	R170	163	R180	159	R190	158

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RESISTOR

SYMBOL NO.	INDEX NO.
R191	160
R192	164
R193	160
R194	160
R195	158
R196	164
R197	158
R198	164
R199	167
R200	160

SYMBOL NO.	INDEX NO.
R201	167
R202	160
R203	160
R204	160
R205	167
R206	164
R207	164
R208	160
R209	164
R210	164

SYMBOL NO.	INDEX NO.
R211	164
R212	160
R213	160
R214	167
R215	164
R216	160
R217	167
R218	160
R219	164
R220	160

SYMBOL NO.	INDEX NO.
R221	164
R222	164
R223	164
R224	160
R225	164
R226	167
R227	164
R228	164
R229	160
R230	160

SYMBOL NO.	INDEX NO.
R231	160
R232	164
R233	160
R234	164
R235	167
R236	160
R237	164
R238	160
R239	167
R240	164

SYMBOL NO.	INDEX NO.
R241	164
R242	164
R243	160
R244	167
R245	160
R246	167
R247	160
R248	167
R249	160
R250	167

SYMBOL NO.	INDEX NO.
R251	160
R252	167
R253	160
R254	167
R255	160
R256	167
R257	160
R258	167
R259	----
R260	167

RESISTOR

SYMBOL NO.	INDEX NO.
R261	164
R262	164
R263	----
R264	160
R265	165
R266	164
R267	164
R268	164
R269	164
R270	164

SYMBOL NO.	INDEX NO.
R271	164
R272	164
R273	169
R274	169
R275	169
R276	169
R277	169
R278	169
R279	169
R280	169

SYMBOL NO.	INDEX NO.
R281	162
R282	160
R283	160
R284	160
R285	160
R286	160
R287	160
R288	160
R289	160
R290	160

SYMBOL NO.	INDEX NO.
R291	160
R292	160
R293	160
R294	164
R295	164
R296	164
R297	164
R298	164
R299	164
R300	164

SYMBOL NO.	INDEX NO.
R301	164
R302	164
R303	164
R304	164
R305	164
R306	164
R307	164
R308	164
R309	164
R310	165

SYMBOL NO.	INDEX NO.
R311	165
R312	165
R313	165
R314	164
R315	164
R316	164
R317	164
R318	172
R319	160
R320	----

SYMBOL NO.	INDEX NO.
R321	164
R322	164
R323	164
R324	164
R325	166
R326	166
R327	172
R328	172
R329	172
R330	171

RESISTOR

SYMBOL NO.	INDEX NO.
R331	171
R332	171
R333	171
R334	171
R335	171
R336	171
R337	171
R338	171
R339	171
R340	171

SYMBOL NO.	INDEX NO.
R341	168
R342	168
R343	168
R344	168
R345	168
R346	168
R347	168
R348	168
R349	168
R350	168

SYMBOL NO.	INDEX NO.
R351	168
R352	168
R353	160
R354	160

RN

SYMBOL NO.	INDEX NO.
RN1	146
RN2	146
RN3	146
RN4	146
RN5	146
RN6	147
RN7	147
RN8	147
RN9	147
RN10	147

SYMBOL NO.	INDEX NO.
RN11	147
RN12	149
RN13	145
RN14	149
RN15	145
RN16	145
RN17	145
RN18	145
RN19	145
RN20	145

SYMBOL NO.	INDEX NO.
RN21	145
RN22	147
RN23	147
RN24	147
RN25	147
RN26	147
RN27	147
RN28	145
RN29	145
RN30	145

SYMBOL NO.	INDEX NO.
RN31	145
RN32	145
RN33	147
RN34	147
RN35	147
RN36	147
RN37	145
RN38	147
RN39	147
RN40	147

SYMBOL NO.	INDEX NO.
RN41	147
RN42	147
RN43	147
RN44	146
RN45	146
RN46	147
RN47	147
RN48	147
RN49	147
RN50	146

SYMBOL NO.	INDEX NO.
RN51	146
RN52	146
RN53	145
RN54	145
RN55	145
RN56	145
RN57	----
RN58	147
RN59	----
RN60	148

SYMBOL NO.	INDEX NO.
RN61	148
RN62	147
RN63	150
RN64	150

SWITCH

SYMBOL NO.	INDEX NO.
SW1	113
SW2	110
SW3	111
	(112)

13.RSCU BOARD (G408/G411)

Index No.	Part No.	Description	Q'ty Per Assembly
*	G408 5652	RSCU Board	
1	G407 5711	EPROM SCU	
2	A232 5230	IC - NIPU M66384FP	
3	G029 5190	IC - GAZELLE	
4	G407 5500	IC - SIBC TC200C160EF-005	

Index No.	Part No.	Description	Q'ty Per Assembly
101	1102 4203	CT Header - 4P	
102	1102 7032	Connector - 5-179583-4	
103	1102 8015	Connector - PHEC120P-R111	
104	1102 8016	Connector - FX2C2-60S-1.27	
105	1102 8017	Connector - FX2C2-68S-1.27	
106	1102 8018	Connector - FX2C2-80S-1.27	
107	1104 0612	Connector - 40P	
108	1104 0764	IC Socket - 8 Pin	
109	1109 0002	IC - SMD200	
110	1204 2321	Dip SW - DISP8NB-1	
111	1204 2352	Rotary Switch - DRR4110	
112	1204 2361	Knob - Switch - MD0050798	
113	1204 2447	Push SW - SKHHLU	
114	1400 0392	Transistor - DTC114EK	
115	1400 0702	Transistor - DTD143EK	
116	1402 1058	Diode Array - DA114	
117	1402 1444	Diode - RB051L-40	
118	1403 0894	LED SML-010LT	
119	1403 0895	LED SML-010MT	
120	1407 1599	TTLIC - SN74LS153NS	
121	1407 1600	TTLIC - SN74LS244NS	
122	1407 2130	TTLIC - 74F08SJ	
123	1407 2134	TTLIC - 74F32SJ	
124	1407 2135	TTLIC - 74F74SJ	
125	1407 2143	TTLIC - 74F244SJ	
126	1407 2187	TTLIC - SN74LS07NS	
127	1407 2218	TTLIC - SN74LS06NS	
128	1407 2378	TTL - SN74ALS245ANS	
129	1407 2463	TTL - IC - SN74ALS08NS	
130	1407 2817	TTL - SN74ALS32NS	
131	1407 3286	IC - TC74HC04AF	
132	1407 3503	IC - AC244F	
133	1407 3724	IC - TC74ACT74F	
134	1407 3825	ALS-TTL SN74ALS244A-1NS	
135	1407 4323	TTL TD74ABT244F	

Index No.	Part No.	Description	Q'ty Per Assembly
136	1407 4689	LSI - SCSI Cont. - SYM53CF92-64PQFP	
137	1407 4754	IC - HD6413002F16	
138	1407 5079	IC - AT93C56-10PC	
139	1408 0575	IC - M51957BFP	
140	1408 1202	SCSI Active Terminater -BH9595FP-Y	
141	1408 1308	Regurator - PQ3RF33	
142	1503 0848	Osicllator - 16MHZ	
143	1503 0858	Osicllator - 39.3216MHZ	
144	1503 0859	Osicllator - 39.78MHZ	
145	1601 7801	Resistor Array - 10KΩ ±5% 1/16W	
146	1601 7804	Resistor Array - 0 Ω 1/16W	
147	1601 7805	Resistor Array - 33 Ω ±5% 1/16W	
148	1601 7807	Registor Array -3.3k Ω -5% 1/16w	
149	1601 7808	Registor - 4.7kΩ ±5% 1/16w	
150	1601 7837	Registor Array - 20K Ω ±5% 1/16W	
151	1604 4333	Capacitor - 100µF±20% 10V	
152	1605 0224	Capacitor - 6pF 50V	
153	1605 0577	Capacitor - 0.33µF+80-20%	
154	1607 0927	Filter - ACF321825-220	
155	1607 0939	Filter - NFM41P11C204	
156	1630 2331	Resistor - 330Ω 1/8W ±5%	
157	1630 3561	Resistor - 560 Ω ±5% 1/10W	
158	1630 4100	Resistor - 10 Ω ±5% 1/16W	
159	1630 4102	Resistor - 1.0KΩ ±5% 1/16W	
160	1630 4103	Resistor - 10KΩ ±5% 1/16W	
161	1630 4150	Resistor - 15Ω ±5.00%,1/16W	
162	1630 4203	Resistor - 20KΩ ±5% 1/16W	
163	1630 4222	Registor - 2.2k Ω - ±5%	
164	1630 4330	Resistor - 33 Ω ±5% 1/8W	
165	1630 4332	Resistor - 3.3K Ω ±5% 1/16W	
166	1630 4470	Resistor - 470 Ω ±5% 1/16W	
167	1630 4472	Resistor - 4.7KΩ ±5% 1/16W	
168	1630 4510	Resistor - 51 Ω ±5% 1/16W	

Index No.	Part No.	Description	Q'ty Per Assembly
169	1630 4560	Resistor - 56Ω ±5% 1/16W	
170	1630 4680	Resistor - 68 Ω ±5% 1/16W	
171	1630 4820	Resistor - 82 Ω ±5% 1/16W	
172	1630 4910	Registor - 91 Ω ±5% 1/16W	
173	1631 0000	Registor - 0 Ω 1/4W	
174	1634 0000	Registor - 0 Ω - 1/16w	
175	1634 1003	Resistor - 100K Ω ±1% 1/16W	
176	1634 1004	Resistor - 1.00M Ω ±1% 1/16W	
177	1634 1500	Resistor - 150 Ω ±1% 1/6W	
178	1634 3000	Resistor - 300 Ω ±1% 1/6W	
179	1634 3302	Resistor - 33.0KΩ ±1%	
180	1634 3900	Resistor - 390 Ω ±1% 1/16W	
181	1634 9102	Resistor - 91.0K Ω ±1% 1/16W	
182	1644 0100	Capacitor - 10µF±20% 10V	
183	1644 0470	Capacitor - 47µF±20% 10V	
184	1644 2479	Capacitor - 4.7µF±20% 25V	
185	1660 2101	Capacitor - 100pF - ±10% - 50V	
186	1660 2120	Capacitor - 12 pF ±5% 50V	
187	1660 2180	Capacitor - 18pF ±5% 50V	
188	1660 2220	Capacitor - 22pF ±20% 35V	
189	1660 3120	Capacitor - 12pF ±5% 50V	
190	1660 4102	Capacitor - 1000pF ±10% 50V	
191	1660 4222	Capacitor - 2200pF - ±10% - 50V	
192	1660 6103	Capacitor - 10000pF - +80%-20%, 50V	
193	1660 8104	Capacitor - 0.1µF+80-20% 25V	
194	1902 0040	SRAM 256K X8 70NS G9	
195	1903 1006	DRAM 16M 1MX16 60NS EDO G4	

14.SCU BOARD (G407/G410)

CAPACITOR

SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.
C 1	141	C 11	180	C 21	177	C 31	177	C 41	----	C 51	----	C 61	----
C 2	180	C 12	173	C 22	179	C 32	180	C 42	----	C 52	----	C 62	----
C 3	177	C 13	169	C 23	169	C 33	176	C 43	----	C 53	----	C 63	----
C 4	180	C 14	142	C 24	180	C 34	176	C 44	----	C 54	----	C 64	----
C 5	177	C 15	142	C 25	169	C 35	----	C 45	180	C 55	180	C 65	180
C 6	175	C 16	180	C 26	180	C 36	175	C 46	177	C 56	177	C 66	180
C 7	175	C 17	180	C 27	177	C 37	----	C 47	180	C 57	180	C 67	180
C 8	141	C 18	180	C 28	180	C 38	----	C 48	177	C 58	177	C 68	172
C 9	169	C 19	177	C 29	170	C 39	177	C 49	180	C 59	179	C 69	172
C 10	173	C 20	180	C 30	169	C 40	180	C 50	177	C 60	169	C 70	180

CAPACITOR

SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.
C 71	180	C 81	180	C 91	177	C 101	----	C 111	180	C 121	----	C 131	178
C 72	180	C 82	171	C 92	----	C 102	----	C 112	177	C 122	180	C 132	179
C 73	169	C 83	179	C 93	----	C 103	180	C 113	174	C 123	180	C 133	179
C 74	----	C 84	----	C 94	177	C 104	177	C 114	175	C 124	----	C 134	178
C 75	180	C 85	180	C 95	180	C 105	----	C 115	175	C 125	178	C 135	----
C 76	143	C 86	----	C 96	175	C 106	----	C 116	180	C 126	178	C 136	----
C 77	180	C 87	----	C 97	175	C 107	180	C 117	177	C 127	178	C 137	----
C 78	----	C 88	177	C 98	----	C 108	180	C 118	180	C 128	178	C 138	----
C 79	----	C 89	180	C 99	----	C 109	177	C 119	180	C 129	178	C 139	----
C 80	169	C 90	180	C 100	----	C 110	180	C 120	----	C 130	178	C 140	----

14.SCU BOARD (G407/G410)

CAPACITOR

SYMBOL NO.	INDEX NO.
C141	----
C142	----
C143	180
C144	177
C145	178
C146	----
C147	----
C148	----
C149	----
C150	177

SYMBOL NO.	INDEX NO.
C151	180
C152	180
C153	177
C154	177
C155	177
C156	177
C157	180
C158	180
C159	----
C160	----

SYMBOL NO.	INDEX NO.
C171	178
C172	178
C173	177
C174	180
C175	175
C176	175
C177	175
C178	----
C179	----
C180	----

SYMBOL NO.	INDEX NO.
C181	175
C182	180
C183	177
C184	180
C185	177

CONNECTOR

SYMBOL NO.	INDEX NO.
CN101	102
CN102	102
CN103	103
CN104	105
CN105	----
CN106	104
CN107	101

DIODE

SYMBOL NO.	INDEX NO.
D1	115
D2	116

FILTER

SYMBOL NO.	INDEX NO.
FIL1	144
FIL2	144
FIL3	144
FIL4	144
FIL5	----
FIL6	144
FIL7	144
FIL8	144
FIL9	144
FIL10	----

FILTER

SYMBOL NO.	INDEX NO.
FIL11	----
FIL12	145
FIL13	145
FIL14	144
FIL15	144
FIL16	144
FIL17	144
FIL18	144
FIL19	144
FIL20	144

SYMBOL NO.	INDEX NO.
FIL21	144
FIL22	144
FIL23	----
FIL24	145
FIL25	----
FIL26	144

FUSE

SYMBOL NO.	INDEX NO.
FU1	108

IC

SYMBOL NO.	INDEX NO.
IC1	128
IC2	120
IC3	120
IC4	123
IC5	120
IC6	4
(Socket)	106
IC7	----
IC8	1
IC9	122
IC10	181

SYMBOL NO.	INDEX NO.
IC11	181
IC12	124
IC13	----
IC14	182
IC15	3
IC16	126
IC17	----
IC18	----
IC19	182
IC20	126

SYMBOL NO.	INDEX NO.
IC21	126
IC22	----
IC23	----
IC24	2
IC25	125
IC26	127
IC27	----
IC28	----
IC29	119
IC30	----

SYMBOL NO.	INDEX NO.
IC31	129
(Socket)	107
IC32	119
IC33	131
IC34	121
IC43	126
IC44	126

14.SCU BOARD (G407/G410)

JUMPER

SYMBOL NO.	INDEX NO.
JP1	161
JP2	161
JP3	161
JP4	161
JP5	----
JP6	151
JP7	----
JP8	154
JP9	154
JP10	154

SYMBOL NO.	INDEX NO.
JP11	161
JP12	161
JP17	161
JP58	161
JP59	154
JP60	161
JP61	161
JP64	161
JP65	161
JP69	154

SYMBOL NO.	INDEX NO.
JP70	154
JP71	154
JP72	161
JP73	161
JP76	161
JP78	161
JP79	148
JP80	161

LED

SYMBOL NO.	INDEX NO.
LED1	117
LED2	117
LED3	118

Q

SYMBOL NO.	INDEX NO.
Q1	113
Q2	114

OSC

SYMBOL NO.	INDEX NO.
OSC1	133
OSC2	135
OSC3	134

REG

SYMBOL NO.	INDEX NO.
REG1	132

RESISTOR

SYMBOL NO.	INDEX NO.
R1	147
R2	154
R3	154
R4	154
R5	154
R6	147
R7	161
R8	161
R9	161
R10	161

SYMBOL NO.	INDEX NO.
R11	162
R12	164
R13	167
R14	163
R15	161
R16	161
R17	161
R18	161
R19	161
R20	166

RESISTOR

SYMBOL NO.	INDEX NO.
R21	168
R22	146
R23	150
R24	150
R25	----
R26	150
R27	150
R28	150
R29	----
R30	165

SYMBOL NO.	INDEX NO.
R31	163
R32	155
R33	150
R34	161
R42	150
R48	150
R49	150
R50	150

SYMBOL NO.	INDEX NO.
R51	153
R52	149
R53	154
R54	150
R55	150
R56	150
R57	150
R58	150
R59	150
R60	150

SYMBOL NO.	INDEX NO.
R65	154
R75	154
R76	154
R77	154
R78	154
R79	161
R80	150

SYMBOL NO.	INDEX NO.
R81	150
R82	154
R83	154
R84	154
R85	150
R86	150
R87	156
R88	----
R89	154
R90	154

SYMBOL NO.	INDEX NO.
R91	154
R92	154
R93	154
R94	154
R95	154
R96	150
R97	150
R98	150
R99	154
R100	150

SYMBOL NO.	INDEX NO.
R101	150
R102	150
R103	161
R104	150
R105	150
R106	157
R107	----
R108	----
R109	161
R110	161

14.SCU BOARD (G407/G410)

RESISTOR

SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.
R111	161	R121	154	R131	148	R141	149	R151	154	R161	149	R171	153
R112	161	R122	154	R132	148	R142	153	R152	154	R162	154	R172	153
R113	161	R123	150	R133	148	R143	149	R153	154	R163	154	R173	153
R114	154	R124	154	R134	148	R144	154	R154	153	R164	150	R174	153
R115	154	R125	150	R135	----	R145	150	R155	154	R165	154	R175	153
R116	154	R126	154	R136	161	R146	154	R156	149	R166	153	R176	153
R117	154	R127	148	R137	161	R147	149	R157	150	R167	153	R177	153
R118	154	R128	148	R138	161	R148	153	R158	150	R168	153	R178	149
R119	154	R129	148	R139	161	R149	154	R159	150	R169	153	R179	149
R120	154	R130	148	R140	154	R150	154	R160	158	R170	153	R180	149

RESISTOR

SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.	SYMBOL NO.	INDEX NO.
R181	149	R191	150	R201	156	R211	154	R221	154	R231	150	R241	154
R182	149	R192	154	R202	150	R212	150	R222	154	R232	154	R242	154
R183	149	R193	150	R203	150	R213	150	R223	154	R233	150	R243	150
R184	149	R194	150	R204	150	R214	156	R224	150	R234	154	R244	156
R185	149	R195	148	R205	156	R215	154	R225	154	R235	156	R245	150
R186	149	R196	154	R206	154	R216	150	R226	156	R236	150	R246	156
R187	149	R197	148	R207	154	R217	156	R227	154	R237	154	R247	150
R188	149	R198	154	R208	150	R218	150	R228	154	R238	150	R248	156
R189	149	R199	156	R209	154	R219	154	R229	150	R239	156	R249	150
R190	148	R200	150	R210	154	R220	150	R230	150	R240	154	R250	156

14.SCU BOARD (G407/G410)

RESISTOR

SYMBOL NO.	INDEX NO.
R251	150
R252	156
R253	150
R254	156
R255	150
R256	156
R257	150
R258	156
R259	150
R260	156

SYMBOL NO.	INDEX NO.
R261	154
R262	154
R263	155
R264	150
R266	154
R267	154
R281	152
R288	150
R289	150
R290	150

SYMBOL NO.	INDEX NO.
R291	150
R292	150
R293	150
R294	154
R295	154
R296	154
R297	154
R298	154
R299	154
R300	154

SYMBOL NO.	INDEX NO.
R301	154
R302	154
R303	154
R304	154
R305	154
R306	154
R307	154
R308	154
R309	154
R310	155

SYMBOL NO.	INDEX NO.
R311	155
R312	155
R313	155
R319	150
R330	159

SYMBOL NO.	INDEX NO.
R331	159
R332	159
R333	159
R334	159
R335	159
R336	159
R337	159
R338	159
R339	159
R340	159

SYMBOL NO.	INDEX NO.
R341	157
R342	157
R343	157
R344	157
R345	157
R346	157
R347	157
R348	157
R349	157
R350	157

RESISTOR

SYMBOL NO.	INDEX NO.
R351	157
R352	157
R353	150
R354	150

RN

SYMBOL NO.	INDEX NO.
RN1	137
RN2	137
RN3	137
RN4	137
RN5	137
RN6	138
RN7	138
RN8	138
RN9	138
RN10	138

SYMBOL NO.	INDEX NO.
RN11	138
RN12	140
RN13	136
RN14	140
RN15	136
RN16	136
RN17	136
RN18	136
RN19	136
RN20	136

SYMBOL NO.	INDEX NO.
RN21	136
RN22	138
RN23	138
RN34	138
RN25	138
RN26	138
RN27	138
RN28	136
RN29	136
RN30	136

SYMBOL NO.	INDEX NO.
RN31	136
RN32	136
RN33	138
RN34	138
RN35	138
RN36	138
RN37	136
RN38	138
RN39	138
RN40	----

SYMBOL NO.	INDEX NO.
RN46	138
RN47	138
RN48	138
RN49	138
RN58	138
RN60	139
RN61	139
RN62	138

SWITCH

SYMBOL NO.	INDEX NO.
SW1	112
SW2	109
SW3	110
	(111)

14.SCU BOARD (G407/G410)

Index No.	Part No.	Description	Q'ty Per Assembly
*	G407 5652	SCU Board	1
1	A232 5230	IC - NIPU M66384FP	1
2	G029 5190	IC - GAZELLE	1
3	G407 5500	IC - SIBC TC200C160EF-005	1
4	G407 5711	EPROM SCU	1

Index No.	Part No.	Description	Q'ty Per Assembly
101	1102 4203	CT Header - 4P	
102	1102 7032	Connector - 5-179583-4	
103	1102 8015	Connector - PHEC120P-R111	
104	1102 8016	Connector - FX2C2-60S-1.27	
105	1102 8017	Connector - FX2C2-68S-1.27	
106	1104 0612	Connector - 40P	
107	1104 0764	IC Socket - 8 Pin	
108	1109 0002	IC - SMD200	
109	1204 2321	Dip SW - DISP8NB-1	
110	1204 2352	Rotary Switch - DRR4110	
111	1204 2361	Knob - Switch - MD0050798	
112	1204 2447	Push SW - SKHHLU	
113	1400 0392	Transistor - DTC114EK	
114	1400 0702	Transistor - DTD143EK	
115	1402 1058	Diode Array - DA114	
116	1402 1444	Diode - RB051L-40	
117	1403 0894	LED SML-010LT	
118	1403 0895	LED SML-010MT	
119	1407 1599	TTLIC - SN74LS153NS	
120	1407 1600	TTLIC - SN74LS244NS	
121	1407 2130	TTLIC - 74F08SJ	
122	1407 2135	TTLIC - 74F74SJ	
123	1407 2187	TTLIC - SN74LS07NS	
124	1407 2218	TTLIC - SN74LS06NS	
125	1407 3286	IC - TC74HC04AF	
126	1407 4323	TTL TD74ABT244F	
127	1407 4689	LSI - SCSI Cont. - SYM53CF92-64PQFP	
128	1407 4754	IC - HD6413002F16	
129	1407 5079	IC - AT93C56-10PC	
130	1408 0575	IC - M51957BFP	
131	1408 1202	SCSI Active Terminater -BH9595FP-Y	
132	1408 1308	Regurator - PQ3RF33	
133	1503 0848	Osicllator - 16MHZ	
134	1503 0858	Osicllator - 39.3216MHZ	
135	1503 0859	Osicllator - 39.78MHZ	

Index No.	Part No.	Description	Q'ty Per Assembly
136	1601 7801	Resistor Array - 10KΩ ±5% 1/16W	
137	1601 7804	Resistor Array - 0 Ω 1/16W	
138	1601 7805	Resistor Array - 33 Ω ±5% 1/16W	
139	1601 7807	Registor Array -3.3k Ω -5% 1/16w	
140	1601 7808	Registor - 4.7kΩ ±5% 1/16w	
141	1604 4333	Capacitor - 100µF±20% 10V	
142	1605 0224	Capacitor - 6pF 50V	
143	1605 0577	Capacitor - 0.33µF+80-20%	
144	1607 0927	Filter - ACF321825-220	
145	1607 0939	Filter - NFM41P11C204	
146	1630 2331	Resistor - 330Ω 1/8W ±5%	
147	1630 3561	Resistor - 560 Ω ±5% 1/10W	
148	1630 4100	Resistor - 10 Ω ±5% 1/16W	
149	1630 4102	Resistor - 1.0KΩ ±5% 1/16W	
150	1630 4103	Resistor - 10KΩ ±5% 1/16W	
151	1630 4150	Resistor - 15Ω ±5.00%,1/16W	
152	1630 4203	Resistor - 20KΩ ±5% 1/16W	
153	1630 4222	Registor - 2.2k Ω - ±5%	
154	1630 4330	Resistor - 33 Ω ±5% 1/8W	
155	1630 4332	Resistor - 3.3K Ω ±5% 1/16W	
156	1630 4472	Resistor - 4.7KΩ ±5% 1/16W	
157	1630 4510	Resistor - 51 Ω ±5% 1/16W	
158	1630 4680	Resistor - 68 Ω ±5% 1/16W	
159	1630 4820	Resistor - 82 Ω ±5% 1/16W	
160	1631 0000	Resistor - 0 Ω 1/4W	
161	1634 0000	Registor - 0 Ω - 1/16w	
162	1634 1003	Resistor - 100K Ω ±1% 1/16W	
163	1634 1004	Resistor - 1.00M Ω ±1% 1/16W	
164	1634 1500	Resistor - 150 Ω ±1% 1/16W	
165	1634 3000	Resistor - 300 Ω ±1% 1/16W	
166	1634 3302	Resistor - 33.0KΩ ±1%	
167	1634 3900	Resistor - 390 Ω ±1% 1/16W	
168	1634 9102	Resistor - 91.0K Ω ±1% 1/16W	

Index No.	Part No.	Description	Q'ty Per Assembly
169	1644 0100	Capacitor - 10µF±20% 10V	
170	1644 0470	Capacitor - 47µF±20% 10V	
171	1644 2479	Capacitor - 4.7µF±20% 25V	
172	1660 2101	Capacitor - 100pF - ±10% - 50V	
173	1660 2120	Capacitor - 12 pF ±5% 50V	
174	1660 2180	Capacitor - 18pF ±5% 50V	
175	1660 2220	Capacitor - 22pF ±20% 35V	
176	1660 3120	Capacitor - 12pF ±5% 50V	
177	1660 4102	Capacitor - 1000pF ±10% 50V	
178	1660 4222	Capacitor - 2200pF - ±10% - 50V	
179	1660 6103	Capacitor - 10000pF - +80%-20%, 50V	
180	1660 8104	Capacitor - 0.1µF+80-20% 25V	
181	1902 0040	IC - 256K X8 70NS G9	
182	1903 1006	DRAM 16M 1MX16 60NS EDO G4	

15.IOB BOARD (G407/G408/G410/G411)

CAPACITOR

SYMBOL NO.	INDEX NO.
C201	132
C202	137
C203	---
C204	-
C205	---
	-
C206	---
C207	-
C208	
C209	---
C210	-

SYMBOL NO.	INDEX NO.
C211	133
C212	131
C213	131
C214	133
C215	133
C216	132
C217	132
C218	137
C219	134
C220	136

SYMBOL NO.	INDEX NO.
C221	134
C222	136
C223	134
C224	137
C225	134
C226	137
C227	134
C228	137
C229	134
C230	137

SYMBOL NO.	INDEX NO.
C231	137
C232	137
C233	135
C234	137
C235	136
C236	---
C237	-
C238	137
C239	137
C240	137

SYMBOL NO.	INDEX NO.
CN201	111
CN202	110
CN203	107
CN204	109
CN205	103
CN206	101
CN207	105
CN208	104
CN209	108
CN210	102

CONNECTOR

SYMBOL NO.	INDEX NO.
CN211	106

FILTER

SYMBOL NO.	INDEX NO.
FIL201	120

IC

SYMBOL NO.	INDEX NO.
IC201	117
IC202	115

ZD

SYMBOL NO.	INDEX NO.
ZD201	114
ZD202	114
ZD203	113

JUMPER

SYMBOL NO.	INDEX NO.
JP201	---
JP202	-
JP203	138
JP204	138
JP205	138
	138
JP206	
JP207	138
JP208	138
JP209	138
JP210	138

Q

SYMBOL NO.	INDEX NO.
Q201	112
Q202	112
Q203	112
Q204	112
Q205	112
Q206	116

RESISTOR

SYMBOL NO.	INDEX NO.
R201	123
R202	124
R203	123
R204	123
R205	123
R206	124
R207	124
R208	123
R209	123
R210	123

SYMBOL NO.	INDEX NO.
R211	124
R212	124
R213	124
R214	124
R215	122
R216	122
R217	122
R218	122
R219	122
R220	122

SYMBOL NO.	INDEX NO.
R221	122
R222	122
R223	122
R224	122
R225	122
R226	124
R227	130
R228	128
R229	129
R230	127

SYMBOL NO.	INDEX NO.
R231	121
R232	121
R233	125
R234	126
R235	121
R236	121
R237	123
R238	123

RN

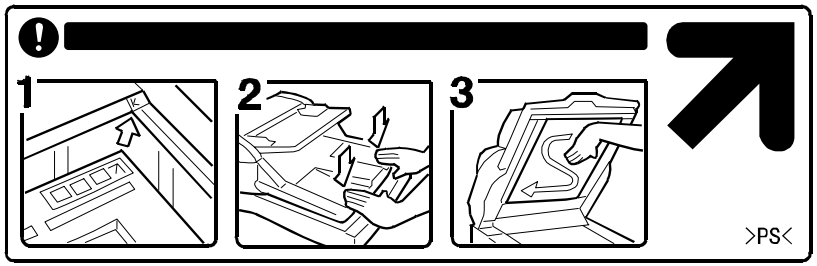
SYMBOL NO.	INDEX NO.
RN201	119
RN202	118
RN203	119
RN204	119
RN205	119
RN206	119
RN207	119

15.IOB BOARD (G407/G408/G410/G411)

Index No.	Part No.	Description	Q'ty Per Assembly
*	G407 5100	IOB Board	1
101	1102 0907	Connector - 6P	
102	1102 4988	Connector - 5569-10A	
103	1102 6299	Connector - 6P	
104	1102 6301	Connector - 8P	
105	1102 6302	Connector - 9P	
106	1102 6313	Connector - 6P	
107	1102 6403	Connector - 30P	
108	1102 6592	Connector - 8P	
109	1102 6593	Connector - 9P	
110	1102 7389	Connector - FH12-50S-0.5SV	
111	1102 8026	Connector - PHEC120R-R111	
112	1400 0702	Transistor - DTD143EK	
113	1402 1334	Diode - UDZ2.0B	
114	1402 1380	Diode - PTZ 6.2A	
115	1407 2187	TTLIC - SN74LS07NS	
116	1407 2231	IC - TD62308AF	
117	1408 1297	IC - STK672-050	
118	1601 7800	Resistor Array - 1KΩ ±5% 1/16W	
119	1601 7805	Resistor Array - 33 Ω ±5% 1/16W	
120	1607 0927	Filter - ACF321825-220	
121	1630 4102	Resistor - 1.0KΩ ±5% 1/16W	
122	1630 4103	Resistor - 10KΩ ±5% 1/16W	
123	1630 4330	Resistor - 33 Ω ±5% 1/8W	
124	1630 4472	Resistor - 4.7KΩ ±5% 1/16W	
125	1634 1001	Resistor - 1KΩ ±5% 1/16W	
126	1634 1002	Resistor - 10 Ω ±5% 1/16W	
127	1634 1102	Resistor - 11K Ω ±1% 1/16W	
128	1634 3302	Resistor - 33.0KΩ ±1%	
129	1634 4701	Resistor - 4.70 Ω ±1% 1A16W	
130	1634 7501	Resistor - 7.50K Ω ±1%	
131	1640 0101	Capacitor - 100μF10V	
132	1640 5101	Capacitor - 100μF±20% 50V	
133	1642 2470	Capacitor - 47μF±20% 25V	
134	1660 4102	Capacitor - 1000pF ±10% 50V	
135	1660 6103	Capacitor - 10000pF - +80%-20%, 50V	
136	1660 7104	Capacitor - 100000pF 50V	
137	1660 8104	Capacitor - 0.1μF+80-20% 25V	

16.DECAL AND DOCUMENT

1



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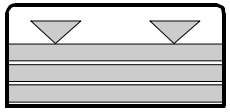

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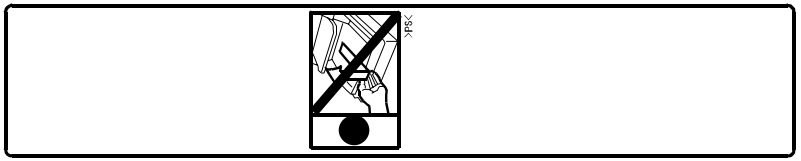

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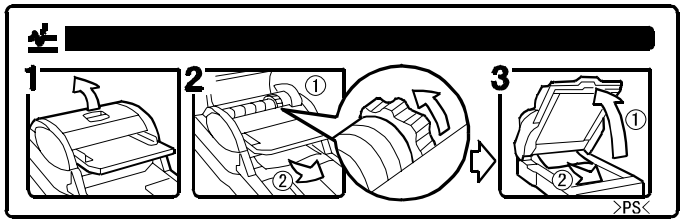

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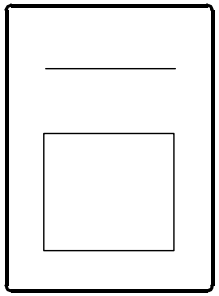

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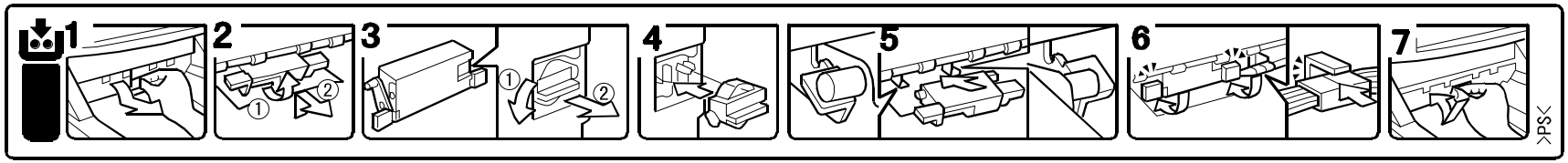
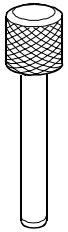
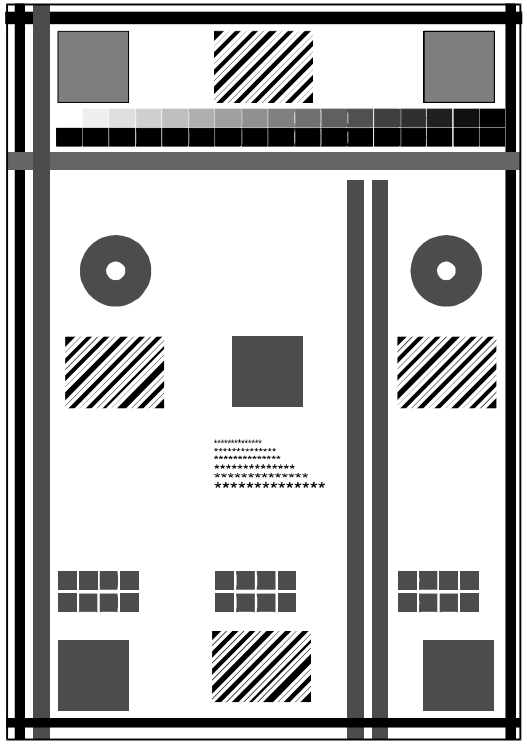
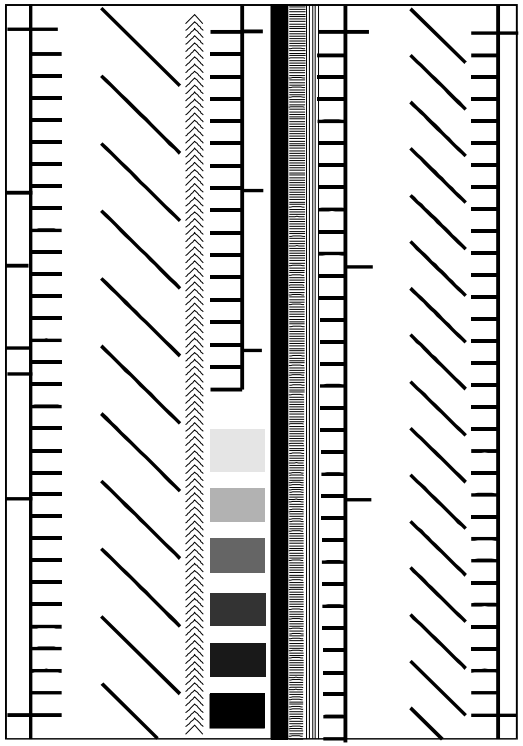


16.DECAL AND DOCUMENT

Index No.	Part No.	Description	Q'ty Per Assembly
1	G407 4051	Decal - Platen Cover	1
2	A048 6749	Decal - Manual Feed	1
3	G407 4022	Caution Decal - Original Stopper	1
4	G407 4027	Decal - Original Remuval	1
5	G407 6653	Operating Instructions - English NA	1
5	G407 6657	Operating Instructions - English EU	1
6	G514 3711	Decal - Endorser Set	1

Index No.	Part No.	Description	Q'ty Per Assembly

17.SPECIAL TOOLS (G407/G408/G410/G411)

1	2	3
		

17.SPECIAL TOOLS (G407/G408/G410/G411)

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2	G404 9004	RS-13 Chart (A3 55kg)	1
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